

Historic, archived document

Do not assume content reflects current scientific knowledge, policies, or practices.



Department of
Agriculture

Forest Service

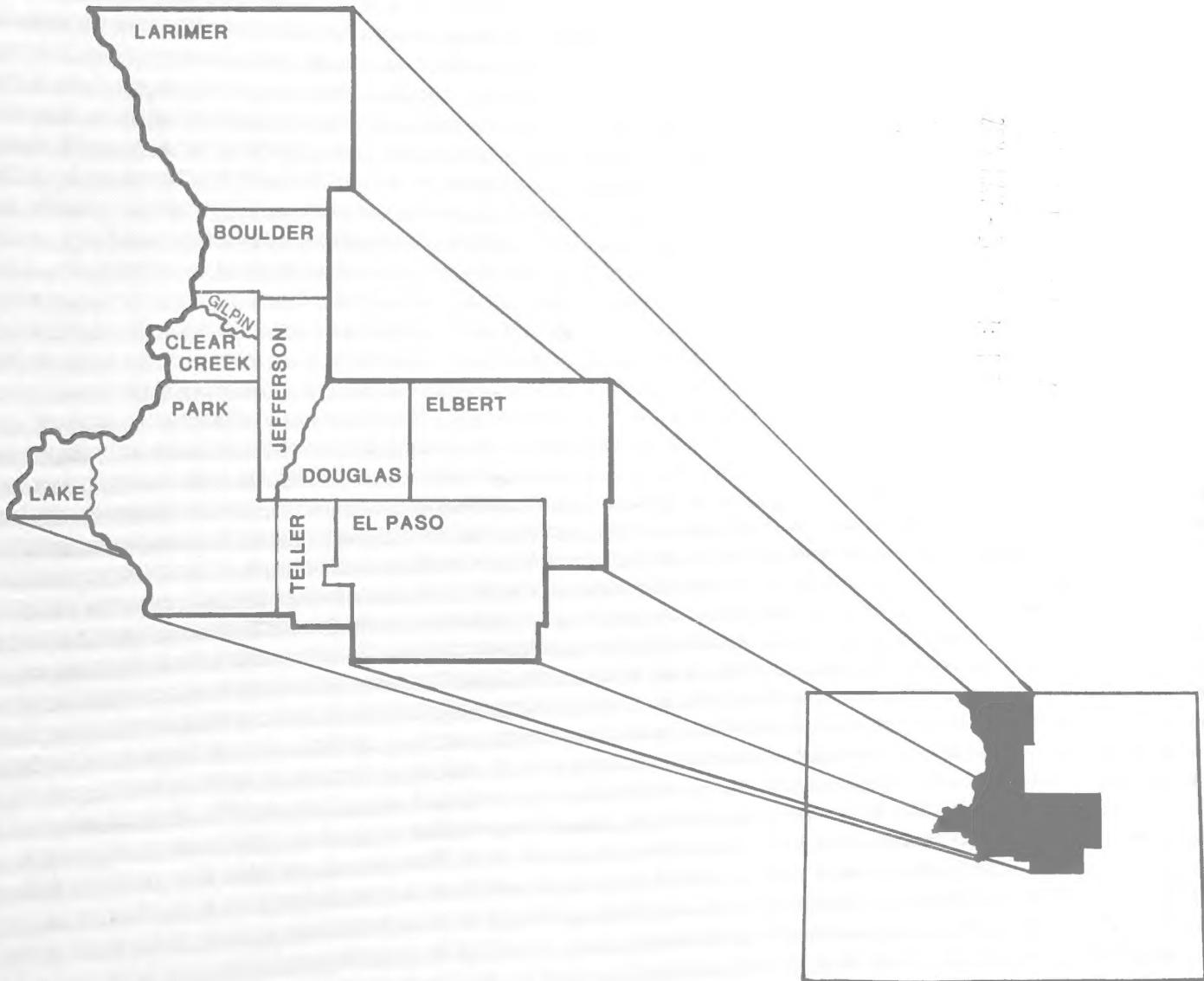
Intermountain
Research Station

Resource
Bulletin
INT-41



Colorado's Northern Front Range: Forest Statistics for State and Private Land, 1983

Roger C. Conner
Shirley H. Waters



THE AUTHORS

ROGER C. CONNER is a forester with the Forest Survey Research Work Unit at the Intermountain Research Station in Ogden, UT. His primary area of responsibility is in resource analysis. He holds a B.S. degree in forestry from Virginia Polytechnic Institute and State University. He began his Forest Service career with the Intermountain Station in 1980.

SHIRLEY H. WATERS is a computer programmer analyst in the Forest Survey Research Work Unit at the Intermountain Research Station in Ogden, UT. Her primary area of responsibility is compilation. She holds a B.A. degree in computer science from Weber State College, Ogden, UT. She began her Forest Service career in 1967 with the Intermountain Station.

ACKNOWLEDGMENTS

This report is the result of the combined efforts of numerous people on the Forest Survey staff. In addition to the photo interpretation and field crews, several individuals played key roles in the reduction of basic data into information describing the extent, nature, and condition of the forest resources in Colorado: Dennis Collins supervised the data collection; Sharon Woudenberg compiled the data and made summaries; and Susan Brown and Velma Inama transformed the data summaries into tables of information. Acknowledgment is given to the Colorado State Forest Service for its cooperation and assistance in collecting the inventory data. And we extend a special note of gratitude to the private land owners who allowed the field crews access to the sample locations on their property.

RESEARCH SUMMARY

Colorado's northern Front Range contains over 1 million acres of timberland and 63,000 acres of woodland. Productivity on the majority of the timberland is low with an average net annual growth of about 22 cubic feet per acre per year for 1982. Timberland sawtimber volume totals about 3.0 billion board feet (International 1/4-inch rule). Industrial roundwood harvest was over 2 million cubic feet. Fuelwood harvest from woodland was more than 19 million cubic feet.

CONTENTS

	Page
Introduction	1
Highlights	2
Area	2
Inventory	2
Components of Change	3
How the Inventory was Conducted	3
Prefield	3
Field	3
Compilation	3
Data Reliability	3
Terminology and Data Tables	3
Terminology	3
References	6
Figures	
1. Counties covered by this report	1
2. Distribution of land area in Colorado's northern Front Range	2
Forest Survey Tables	
1. Area of State and privately owned forest land with percent standard error in Colorado's northern Front Range, 1983	7
2. Net volume, net annual growth, and annual mortality of growing stock and sawtimber on State and privately owned timberland with percent standard error in Colorado's northern Front Range	7
3. Total land and water area by ownership class in Colorado's northern Front Range, 1983	8
4. Total land area on State and privately owned land by major land class and ownership class in Colorado's northern Front Range, 1983	8
5. Area of forest land on State and privately owned land by forest type, ownership class, and land class in Colorado's northern Front Range, 1983	9
6. Cubic feet of net volume in trees on State and privately owned forest land by species and ownership class in Colorado's northern Front Range, 1983	9

August 1987

Intermountain Research Station
324 25th Street
Ogden, UT 84401

Page	Page
7. Cubic feet of net annual growth in trees on State and privately owned forest land by species and ownership class in Colorado's northern Front Range, 1982	10
8. Cubic feet of annual mortality in trees on State and privately owned forest land by species and ownership class in Colorado's northern Front Range, 1982	10
9. Area of State and privately owned timberland by forest type, stand-size class, and productivity class in Colorado's northern Front Range, 1983	11
10. Area of State owned timberland by forest type, stand-size class, and productivity class in Colorado's northern Front Range, 1983	13
11. Area of nonindustrial privately owned timberland by forest type, stand-size class, and productivity class in Colorado's northern Front Range, 1983	15
12. Area of State and privately owned timberland by stand volume and ownership class in Colorado's northern Front Range, 1983	16
13. Area of State and privately owned timberland by forest type and area condition class in Colorado's northern Front Range, 1983	17
14. Number of growing-stock trees on State and privately owned timberland by species and diameter class in Colorado's northern Front Range, 1983	17
15. Number of cull and salvable dead trees on State and privately owned timberland by ownership class, and softwoods and hardwoods in Colorado's northern Front Range, 1983	18
16. Net volume of growing stock on State and privately owned timberland by ownership class forest type, and stand-size class in Colorado's northern Front Range, 1983	19
17. Net volume of sawtimber (International 1/4-inch rule) on State and privately owned timberland by ownership class, forest type, and stand-size class in Colorado's northern Front Range, 1983	20
18. Net volume of sawtimber (Scribner rule) on State and privately owned timberland by ownership class, forest type, and stand-size class in Colorado's northern Front Range, 1983	21
19. Net volume of growing stock on State and privately owned timberland by ownership class and species in Colorado's northern Front Range, 1983	22
20. Net volume of sawtimber (International 1/4-inch rule) on State and privately owned timberland by ownership class and species in Colorado's northern Front Range, 1983	22
21. Net volume of sawtimber (Scribner rule) on State and privately owned timberland by ownership class and species in Colorado's northern Front Range, 1983	23
22. Net volume of growing stock on State and privately owned timberland by species and diameter class in Colorado's northern Front Range, 1983	24
23. Net volume of sawtimber (International 1/4-inch rule) on State and privately owned timberland by species and diameter class in Colorado's northern Front Range, 1983	25
24. Net volume of sawtimber (Scribner rule) on State and privately owned timberland by species and diameter class in Colorado's northern Front Range, 1983	26
25. Net volume of timber on State and privately owned timberland by class of timber, and softwoods and hardwoods in Colorado's northern Front Range, 1983	26
26. Net volume of growing stock on State and privately owned timberland by forest type and species in Colorado's northern Front Range, 1983	27
27. Net volume of sawtimber (International 1/4-inch rule) on State and privately owned timberland by forest type and species in Colorado's northern Front Range, 1983	28
28. Net volume of sawtimber (Scribner rule) on State and privately owned timberland by forest type and species in Colorado's northern Front Range, 1983	29
29. Net annual growth of growing stock on State and privately owned timberland by ownership class and species in Colorado's northern Front Range, 1982	30
30. Net annual growth of sawtimber (International 1/4-inch rule) on State and privately owned timberland by ownership class and species in Colorado's northern Front Range, 1982	30
31. Net annual growth of sawtimber (Scribner rule) on State and privately owned timberland by ownership class and species in Colorado's northern Front Range, 1982	31
32. Net annual growth of growing stock on State and privately owned timberland by species and diameter class in Colorado's northern Front Range, 1982	32
33. Net annual growth of sawtimber (International 1/4-inch rule) on State and privately owned timberland by species and diameter class in Colorado's northern Front Range, 1982	33
34. Net annual growth of sawtimber (Scribner rule) on State and privately owned timberland by species and diameter class in Colorado's northern Front Range, 1982	34
35. Annual mortality of growing stock on State and privately owned timberland by ownership class and species in Colorado's northern Front Range, 1982	35
36. Annual mortality of sawtimber (International 1/4-inch rule) on State and privately owned timberland by ownership class and species in Colorado's northern Front Range, 1982	35

Page	Page
37. Annual mortality of sawtimber (Scribner rule) on State and privately owned timberland by ownership class and species in Colorado's northern Front Range, 1982	35
38. Annual mortality of growing stock on State and privately owned timberland by species and diameter class in Colorado's northern Front Range, 1982.....	36
39. Annual mortality of sawtimber (International 1/4-inch rule) on State and privately owned timberland by species and diameter class in Colorado's northern Front Range, 1982.....	36
40. Annual mortality of sawtimber (Scribner rule) on State and privately owned timberland by species and diameter class in Colorado's northern Front Range, 1982	37
41. Annual mortality of growing stock on State and privately owned timberland by cause of death and species in Colorado's northern Front Range, 1982	37
42. Annual mortality of sawtimber (International 1/4-inch rule) on State and privately owned timberland by cause of death and species in Colorado's northern Front Range, 1982.....	38
43. Annual mortality of sawtimber (Scribner rule) on State and privately owned timberland by cause of death and species in Colorado's northern Front Range, 1982	38
44. Area of State and privately owned woodland by ownership class and forest type in Colorado's northern Front Range, 1983	39
45. Net volume of State and privately owned woodland by ownership class and species in Colorado's northern Front Range, 1983.....	39
46. Net annual growth of State and privately owned woodland by ownership class and species in Colorado's northern Front Range, 1982	39
47. Area of State and privately owned timberland by county and ownership class in Colorado's northern Front Range, 1983	40
48. Net volume of growing stock on State and privately owned timberland by county and ownership class in Colorado's northern Front Range, 1983.....	40
49. Net volume of sawtimber (International 1/4-inch rule) on State and privately owned timberland by county and ownership class in Colorado's northern Front Range, 1983	41
50. Net volume of sawtimber (Scribner rule) on State and privately owned timberland by county and ownership class in Colorado's northern Front Range, 1983.....	41
51. Net annual growth of growing stock on State and privately owned timberland by county and ownership class in Colorado's northern Front Range, 1982	42
52. Net annual growth of sawtimber (International 1/4-inch rule) on State and privately owned timberland by county and ownership class in Colorado's northern Front Range, 1982.....	42
53. Net annual growth of sawtimber (Scribner rule) on State and privately owned timberland by county and ownership class in Colorado's northern Front Range, 1982	43
54. Annual mortality of growing stock on State and privately owned timberland by county and ownership class in Colorado's northern Front Range, 1982	43
55. Annual mortality of sawtimber (International 1/4-inch rule) on State and privately owned timberland by county and ownership class in Colorado's northern Front Range, 1982.....	44
56. Annual mortality of sawtimber (Scribner rule) on State and privately owned timberland by county and ownership class in Colorado's northern Front Range, 1982	44
57. Area of State and privately owned woodland by county and ownership class in Colorado's northern Front Range, 1983	45
58. Net volume of State and privately owned woodland by county and ownership class in Colorado's northern Front Range, 1983.....	45
59. Net annual growth of State and privately owned woodland by county and ownership class in Colorado's northern Front Range, 1982	46

Colorado's Northern Front Range: Forest Statistics for State and Private Land, 1983

Roger C. Conner
Shirley H. Waters

INTRODUCTION

This resource bulletin reports the findings of the Forest Survey inventory of a sample area defined as State and private lands in Boulder, Clear Creek, Douglas, Elbert, El Paso, Gilpin, Jefferson, Lake, Larimer, Park, and Teller Counties of the northern Front Range in Colorado (fig. 1). The two-phase survey began with prefld work in June 1981. The field phase involved, in whole or in part, the

summers of 1981 to 1984 with the bulk of the data collected in 1982.

The data in this report pertain only to the State and private forest resources of the counties listed above. Data for lands administered by various public agencies such as National Forest Systems and Bureau of Land Management will be included in a subsequent, comprehensive statewide report that will include all lands and all owners.

The primary objective of Forest Survey—a continuing, nationwide undertaking of the Forest Service, U.S.

COLORADO

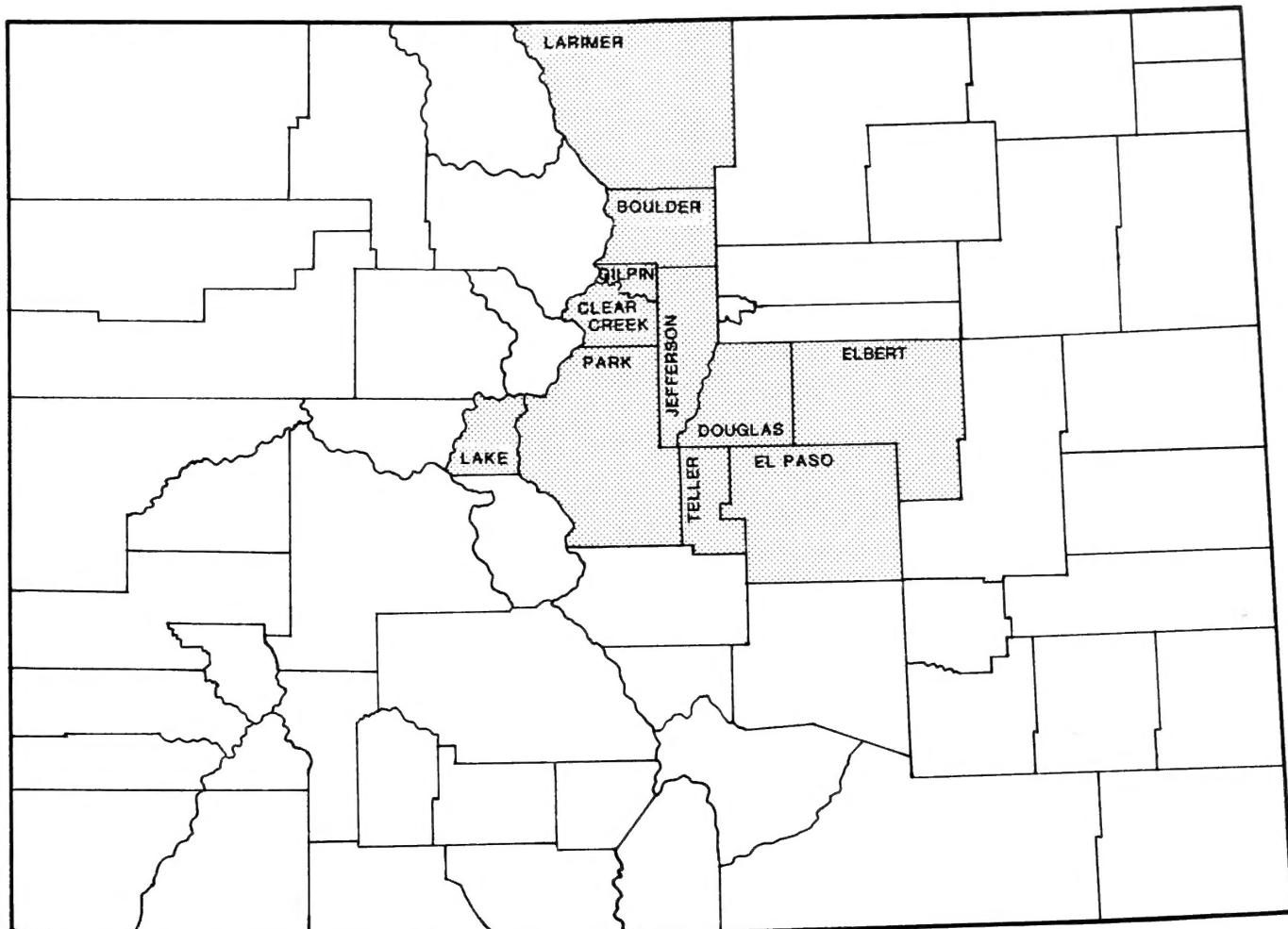


Figure 1—Counties covered by this report.

Department of Agriculture—is to provide an assessment of the renewable resource situation for forest and rangelands of the Nation. Fundamental to the accomplishment of the objective are the periodic State-by-State resource inventories. Originally, Forest Survey was authorized by the McSweeney-McNary Act of 1928. The current authorization is through the Renewable Resources Research Act of 1978.

The Intermountain Research Station with headquarters in Ogden, UT, conducts the forest resource inventories for the Rocky Mountain States of Arizona, Colorado, Idaho, Montana, New Mexico, Nevada, western South Dakota, Utah, Wyoming, western Texas, and Oklahoma's Panhandle. These inventories provide information on the extent and condition of State and privately owned forest lands and most other lands not in the National Forest System, volume of timber, and rates of timber growth, removals, and mortality.

These data, when combined with similar information on National Forest lands, provide a basis for forming forest policies and programs and for the orderly development and use of the resources.

HIGHLIGHTS

Area

- State and private lands account for nearly 5.1 million acres, 63 percent of the total land area in Colorado's northern Front Range (fig. 2).
- Forests occupy over 1.1 million acres including reserved land, or 22 percent of the total State and private land area.

- Of the forest land, more than 1 million acres, 93 percent, are classified as nonreserved timberland.
- The remainder of the nonreserved forest land, some 63,000 acres, is classified as woodland.
- Private ownership accounts for 94 percent of both the timberland and woodland areas.
- Ponderosa pine, Douglas-fir, lodgepole pine, and aspen are the predominant forest types and make up 91 percent of the timberland area.
- Oak is the predominant forest type on woodland, occurring on 67 percent of the woodland area.

Inventory

- Timberland growing-stock volume amounts to 963 million cubic feet which includes a sawtimber volume of about 3.0 billion board feet (International 1/4-inch rule).
- The majority of the timberland growing-stock volume is ponderosa pine (44 percent), Douglas-fir (18 percent), lodgepole pine (16 percent), and Engelmann spruce (11 percent). The remaining percentage is made up of six other species.
- Volume on woodland amounts to 16 million cubic feet, 50 percent of which is pinyon and juniper species, woodland hardwoods (48 percent), and other softwoods (2 percent).
- About 95 percent of the timberland growing-stock and sawtimber volumes is privately owned.
- Of the growing-stock volume, 77 percent is in trees less than 15 inches diameter at breast height (d.b.h.).
- Of the sawtimber volume, 78 percent is in trees less than 17 inches d.b.h.

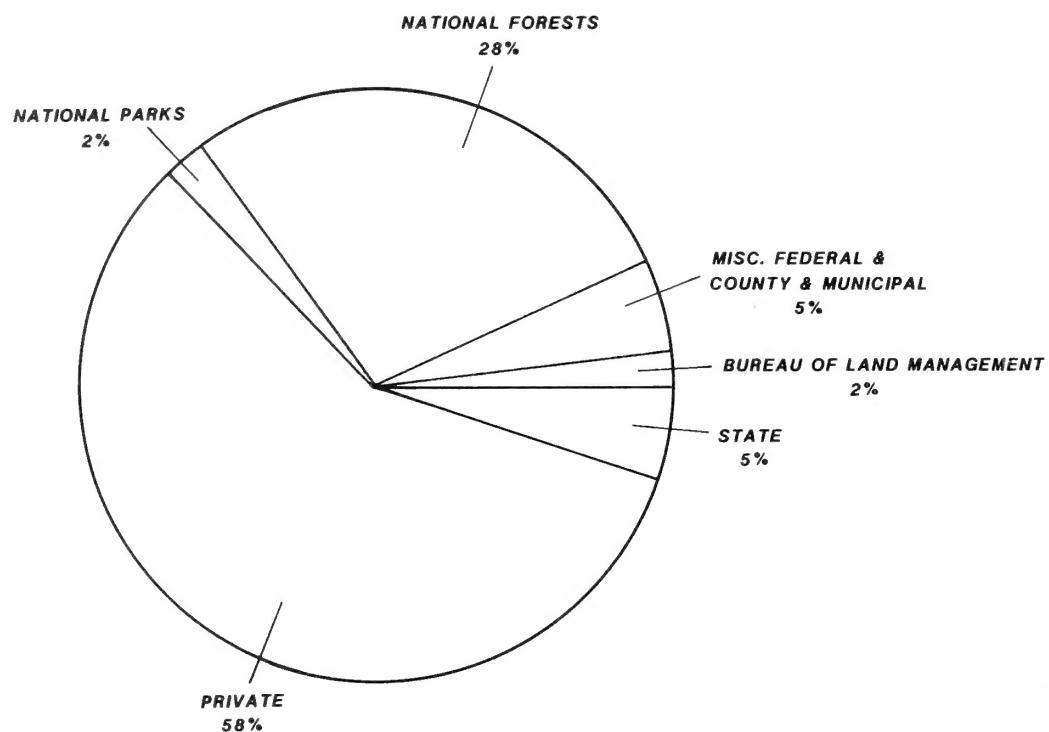


Figure 2—Distribution of land area in Colorado's northern Front Range by owner.

- Less than 4 percent of the timberland area is at least medium to fully stocked with desirable trees, and over a fifth of the area, 217,000 acres, is made up of high-risk old-growth stands.
- Only 9 percent of the timberland area is capable of producing 50 cubic feet of wood per acre per year. Net annual growth for 1982 was about 22 cubic feet per acre per year.
- Nearly 38.5 million cubic feet of volume on timberland is in cull and salvable dead trees, with less than 5 percent of this volume in rotten cull trees.

Components of Change

Growth

- Net annual growth was approximately 22.4 million cubic feet for timberland and 378,000 cubic feet for woodland in 1982.
- Private land contains 95 percent of the timberland net growth and 96 percent of the woodland net growth.

Mortality

- Engelmann spruce accounts for more than 1.7 million board feet (International 1/4-inch rule), 47 percent of the sawtimber mortality.
- Annual mortality on timberland of over 1.1 million cubic feet offsets 5 percent of the gross annual growth.

Removals

- An estimated 2.3 million cubic feet of industrial roundwood was harvested in 1982. Of this, 33 percent came from State and private lands (McLain 1985).
- Of the total board-foot volume harvested, 28 percent (about 3.6 million board feet, International 1/4-inch rule) was cut from State and private land.
- Ponderosa pine accounted for nearly 57 percent of the total industrial roundwood harvest, with lodgepole pine (18 percent) and Douglas-fir (14 percent) adding to the total (includes all land owners in the sample area).
- Total fuelwood harvest was over 241,000 cords (about 19.3 million cubic feet), of which 67 percent was cut from State and private lands (McLain and Booth 1985). This was more than eight times the industrial roundwood harvest.
- Ponderosa pine made up nearly 65 percent of the fuelwood harvest with aspen (10 percent), lodgepole pine (8 percent), and pinyon and juniper (7 percent combined) adding to the remainder (McLain 1985) (includes all land owners in the sample area).
- Dead trees accounted for 83 percent of the fuelwood harvested from State and private lands (nearly 135,000 cords) (McLain 1985).

HOW THE INVENTORY WAS CONDUCTED

The inventory was designed to provide reliable statistics at the State and sample area levels.

Prefield

Primary area estimates were based on the classification of 32,873 sample points systematically placed on the latest aerial photographs available. The photo points, adjusted to meet known land areas, were used to stratify and compute area expansion factors for the field sample data.

Field

Land classification and estimates for timber characteristics and volume were based on observations, measurements, or both recorded at 944 ground sample locations, of which 258 were forested. Sample trees were selected using a 5-point sample cluster, which included 1/300-acre fixed radius plots for trees less than 5 inches d.b.h., and 40 basal area factor variable radius plots for trees 5 inches d.b.h. or larger.

Compilation

All photo and field data were loaded onto tape and stored for computer editing, computation, and tabulation. Final estimates from these data were based on statistical summaries, a portion of which is included in this bulletin. Volume and defect were computed using equations developed by Edminster and others (1980, 1981), Kemp (1958), Chojnacky (1985), Meyers (1964), and Meyers and others (1972).

DATA RELIABILITY

Individual cells within tables should be used with caution. Some are based on small sample sizes, resulting in high sampling errors. The standard error percentages shown in tables 1 and 2 were calculated at the 67 percent confidence level.

TERMINOLOGY AND DATA TABLES

The following section contains definitions that are relevant to the timber resource data presented in this resource bulletin. Forest area and timber resource data for Colorado's northern Front Range are displayed in tables 3 through 59.

TERMINOLOGY

Acceptable tree—A growing-stock tree meeting specified standards of size and quality, but not qualifying as a desirable tree.

Area condition class—A classification of timberland reflecting the degree to which the site is being utilized by growing-stock trees and other conditions affecting current and prospective timber growth (see Stocking):

Class 10—Areas fully stocked with desirable trees and not overstocked.

Class 20—Areas fully stocked with desirable trees but overstocked with all live trees.

Class 30—Areas medium to fully stocked with desirable trees and with less than 30 percent of the area controlled by other trees, or inhibiting vegetation or surface conditions that will prevent occupancy by desirable trees, or both.

Class 40—Areas medium to fully stocked with desirable trees and with 30 percent or more of the area controlled by other trees, or conditions that ordinarily prevent occupancy by desirable trees, or both.

Class 50—Areas poorly stocked with desirable trees but fully stocked with growing-stock trees.

Class 60—Areas poorly stocked with desirable trees but with medium to full stocking of growing-stock trees.

Class 70—Areas nonstocked or poorly stocked with desirable trees and poorly stocked with growing-stock trees.

Class 80—Low-risk old-growth stands.

Class 90—High-risk old-growth stands.

Nonstocked—Areas less than 10 percent stocked with growing-stock trees.

Basal area—The cross-sectional area of a tree expressed in square feet. For timber species the calculation is based on diameter at breast height (d.b.h.); for woodland species it is based on diameter at root collar (d.r.c.).

Cord—A pile of stacked wood equivalent to 128 cubic feet of wood and air space having standard dimensions of 4 by 4 by 8 feet.

Cull tree—A live tree that is unmerchantable now or prospectively (see Rough tree and Rotten tree).

Cull volume—Portions of a tree's volume that are not usable for wood products because of rot, form, missing material, or other cubic-foot defect. Form and sound defects include severe sweep and crook, forks, extreme form reduction, large deformities, and dead material.

Deferred forest land—Forest land within the National Forest System that is under study for possible inclusion in the Wilderness System.

Desirable tree—A growing-stock tree (1) having no serious defect in quality to limit present or prospective use for timber products, (2) of relatively high vigor, and (3) containing no pathogens that may result in death or serious deterioration within the next decade.

Diameter at breast height (d.b.h.)—Diameter of the stem measured at 4.5 feet above the ground.

Diameter at root collar (d.r.c.)—Diameter equivalent at the point nearest the ground line that represents the basal area of the tree stem or stems.

Diameter classes—Tree diameters, either d.b.h. or d.r.c., grouped into 2-inch classes labeled by the midpoint of the class.

Farmer-owned land—Land owned by a person who operates a farm and who either does the work or directly supervises the work.

Forest industry land—Land owned by companies or individuals operating a primary wood-processing plant.

Forest land—Land at least 10 percent stocked by forest trees of any size, including land that formerly had such tree cover and that will be naturally or artificially regenerated. The minimum area for classification of forest land is 1 acre. Roadside, streamside, and shelterbelt strips of timber must have a crown width at least 120 feet wide to qualify as forest land. Unimproved roads and trails, streams, and clearings in forest areas are classified as forest if less than 120 feet wide.

Forest tree—A woody plant having a well-developed stem or stems, usually more than 12 feet in height at maturity, with a generally well-defined crown.

Forest type—A classification of forest land based upon and named for the tree species presently forming a plurality of live-tree stocking.

Growing-stock tree—A live sawtimber tree, poletimber tree, sapling, and seedling of timber species meeting specified standards of quality and vigor; excludes cull trees.

Growing-stock volume—Net cubic-foot volume in live growing-stock trees from a 1-foot stump to a minimum 4-inch top (of central stem) outside bark or to the point where the central stem breaks into limbs.

Growth—See definition for Net annual growth.

Hardwood tree—A dicotyledonous tree, usually broad-leaved and deciduous.

High-risk old-growth stand—A timber stand over 100 years old in which the majority of the trees are not expected to survive more than 10 years.

Indian land—Indian land held in trust by the Federal Government.

Industrial wood—All commercial roundwood products except fuelwood.

Land area—The area of dry land and land temporarily or partially covered by water such as marshes, swamps, river flood plains, streams, sloughs, estuaries, and canals less than 120 feet wide; and lakes, reservoirs, and ponds less than 1 acre in size.

Logging residues—The unused portions of growing-stock trees cut or killed by logging.

Low-risk old-growth stand—A timber stand over 100 years old in which the majority of the trees are expected to survive more than 10 years.

Miscellaneous Federal land—Land administered by Federal agencies other than the Forest Service, U.S. Department of Agriculture, or Bureau of Land Management, U.S. Department of the Interior.

Mortality—The net volume of growing-stock trees that have died from natural causes during a specified period.

National Forest land—Public land administered by the Forest Service, U.S. Department of Agriculture.

National Resource land—Public land administered by the Bureau of Land Management, U.S. Department of the Interior.

Net annual growth—The net average annual increase in the volume of trees during a specified period.

Net volume in board feet—The gross board-foot volume in the sawlog portion of growing-stock trees, less deductions for cull volume.

Net volume in cubic feet—Gross cubic-foot volume in the merchantable portion of trees less deductions for cull volume. For timber species, volume is computed for the merchantable stem from a 1-foot stump to a minimum 4.0-inch top diameter outside bark, or to the point where the central stem breaks into limbs. For woodland species, volume is computed outside bark (o.b.) for all woody material above d.r.c. that is larger than 1.5 inches in diameter o.b.

Nonforest land—Land that does not currently qualify as forest land.

Nonindustrial private—All private ownerships except forest industry.

Nonstocked area—Forest land less than 10 percent stocked with live trees.

Old-growth stand—A stand of timber species over 100 years old.

Other private land—Privately owned land other than forest industry or farmer-owned.

Other public land—Public land administered by agencies other than the Forest Service, U.S. Department of Agriculture.

Other removals—The net volume of growing-stock trees removed from the inventory by cultural operations such as timber-stand improvement, by land clearing, and by changes in land use, such as a shift to wilderness.

Poletimber stand—A stand at least 10 percent stocked with growing-stock trees, in which half or more of the stocking is sawtimber or poletimber trees or both, with poletimber stocking exceeding that of sawtimber (see definition for Stocking).

Poletimber tree—A live tree of timber species at least 5 inches d.b.h. but smaller than sawtimber size.

Potential growth—The average net annual cubic-foot growth per acre at culmination of mean annual growth attainable in fully stocked natural stands.

Primary wood-processing plants—Plants using roundwood products such as sawlogs, pulpwood bolts, veneer logs, etc.

Productivity class—A classification of forest land in terms of potential growth.

Removals—The net volume of growing-stock trees removed from the inventory by harvesting, cultural operations, land clearings, or changes in land use.

Reserved forest land—Forest land withdrawn from tree utilization through statute or administrative designation.

Residues:

Coarse residues—Plant residues suitable for chipping, such as slabs, edgings, and ends.

Fine residues—Plant residues not suitable for chipping, such as sawdust, shavings, and veneer clippings.

Plant residues—Wood materials from primary manufacturing plants that are not used for any product.

Rotten tree—A live poletimber or sawtimber tree with more than 67 percent of its total volume cull (cubic-foot) and with more than half of the cull volume attributable to rotten or missing material.

Rough tree—A live poletimber or sawtimber tree with more than 67 percent of its total volume cull (cubic-foot) and with less than half of the cull volume attributable to rotten or missing material.

Roundwood—Logs, bolts, or other round sections cut from trees.

Salvable dead tree—A standing or down dead tree that is currently merchantable by regional standards.

Sapling—A live tree of timber species 1 to 4.9 inches d.b.h. or woodland species 1 to 2.9 inches d.r.c.

Sapling and seedling stand—Timberland stand at least 10 percent stocked on which more than half of the stocking is saplings or seedlings or both.

Sawlog portion—That part of the bole of sawtimber trees between a 1-foot stump and the sawlog top.

Sawlog top—The point on the bole of sawtimber trees above which a sawlog cannot be produced. The minimum sawlog top is 7 inches diameter o.b. for softwoods and 9 inches diameter o.b. for hardwoods.

Sawtimber stand—A stand at least 10 percent stocked with growing-stock trees, with half or more of total stocking in sawtimber or poletimber trees or both, and with sawtimber stocking at least equal to poletimber stocking.

Sawtimber tree—A live tree of timber species meeting regional size and defect specifications. Softwood trees must be at least 9 inches d.b.h. and hardwood trees 11 inches d.b.h.

Sawtimber volume—Net volume in board feet of the sawlog portion of live sawtimber trees.

Seedling—An established live tree of timber species less than 1 inch d.b.h. or woodland species less than 1 inch d.r.c.

Softwood tree—A monocotyledonous tree, usually evergreen, having needle or scalelike leaves.

Standard error—An expression of the degree of confidence that can be placed on an estimated total or average obtained by statistical sampling methods. Standard errors do not include technique errors that could occur in photo classification of areas, field measurements, or compilation of data.

Stand-size classes—A classification of forest land based on the predominant size of trees present (see Sawtimber stand, Poletimber stand, and Sapling and seedling stand).

State, county, and municipal land—Land administered by States, counties, or local public agencies, or land leased by these governmental units for more than 50 years.

Stocking—An expression of the extent to which growing space is effectively utilized by present or potential growing-stock trees of timber species. Percentage stocking is the ratio of actual stocking to full stocking for comparable sites and stands, using basal area as the basis for comparison.

Timberland—Forest land where timber species make up at least 10 percent stocking.

Timber species—Tree species traditionally used for industrial wood products. In the Rocky Mountain States, these include aspen and cottonwood hardwood species and all softwood species except pinyon and juniper.

Timber stand improvement—Treatments such as thinning, pruning, release cutting, girdling, weeding, or poisoning of unwanted trees aimed at improving growing conditions for the remaining trees.

Upper-stem portion—That part of the main stem or fork of sawtimber trees above the sawlog top to a minimum top diameter of 4 inches o.b. or to the point where the main stem or fork breaks into limbs.

Water—Streams, sloughs, estuaries, and canals more than 120 feet wide, and lakes, reservoirs, and ponds more than 1 acre in size at mean high water level.

Wilderness—An area of undeveloped land currently included in the Wilderness System, managed so as to preserve its natural conditions and retain its primeval character and influence.

Woodland—Forest land where timber species make up less than 10 percent stocking.

Woodland species dead volume—Net volume of dead woodland trees and dead net volume portion of live woodland tree species.

Woodland species live volume—Net cubic-foot volume in live woodland tree species.

Woodland species—Tree species not usually converted into industrial wood products. Common uses are fuelwood, fenceposts, and Christmas trees.

REFERENCES

Chojnacky, David C. 1985. Pinyon-juniper volume equations for the central Rocky Mountain States. Res. Pap. INT-339. Ogden, UT: U.S. Department of Agriculture, Forest Service, Intermountain Forest and Range Experiment Station. 27 p.

Edminster, Carleton B.; Mowrer, H. Todd; Hinds, Thomas E. 1981. Volume tables and point-sampling factors for aspen in Colorado. Res. Pap. RM-232. Fort Collins, CO: U.S. Department of Agriculture, Forest Service, Rocky Mountain Forest and Range Experiment Station. 16 p.

Edminster, Carleton B.; Beeson, Robert T.; Metcalf, Gary E. 1980. Volume tables and point-sampling factors for ponderosa pine in the Front Range of Colorado. Res. Pap. RM-218. Fort Collins, CO: U.S. Department of Agriculture, Forest Service, Rocky Mountain Forest and Range Experiment Station. 14 p.

Kemp, Paul D. 1958. Volume tables. Unpublished report on file at: U.S. Department of Agriculture, Forest Service, Intermountain Forest and Range Experiment Station, Ogden, UT.

McLain, William H. 1985. Colorado's industrial roundwood production and mill residues, 1982. Resour. Bull. INT-35. Ogden, UT: U.S. Department of Agriculture, Forest Service, Intermountain Research Station. 13 p.

McLain, William H.; Booth, Gordon D. 1985. Colorado's 1982 fuelwood harvest. Resour. Bull. INT-36. Ogden, UT: U.S. Department of Agriculture, Forest Service, Intermountain Research Station. 11 p.

Meyers, Clifford A. 1964. Volume tables and point-sampling factors for lodgepole pine in Colorado and Wyoming. Res. Pap. RM-6. Fort Collins, CO: U.S. Department of Agriculture, Forest Service, Rocky Mountain Forest and Range Experiment Station. 16 p.

Meyers, Clifford A.; Edminster, Carleton B. 1972. Volume tables and point-sampling factors for Engelmann spruce in Colorado and Wyoming. Res. Pap. RM-95. Fort Collins, CO: U.S. Department of Agriculture, Forest Service, Rocky Mountain Forest and Range Experiment Station. 23 p.

FOREST SURVEY TABLES

Table 1.--Area of State and privately owned forest land with percent standard error in Colorado's northern Front Range, 1983

Item	Softwoods		Hardwoods		All types	
	Acres	Percent standard error	Acres	Percent standard error	Acres	Percent standard error
Timberland	903,441	±3.5	132,882	±17.8	1,036,323	±2.8
Woodland	17,047	±45.6	46,137	±21.0	63,184	±17.8
Reserved forest land: ¹						
Timberland	13,543		2,194		15,737	
Woodland	231		1,372		1,603	
Total forest land	934,262		182,585		1,116,847	

¹Reserved land areas are estimated from aerial photos without field verification; therefore, standard errors are not calculated.

Table 2.--Net volume, net annual growth, and annual mortality of growing stock and sawtimber on State and privately owned timberland with percent standard error in Colorado's northern Front Range.

Item	Softwoods		Hardwoods		All species	
	Volume	Percent standard error	Volume	Percent standard error	Volume	Percent standard error
Net volume, 1983:						
Growing stock (M cubic feet)	897,095	± 6.1	66,428	±21.4	963,523	± 5.7
Sawtimber ¹ (M board feet)	2,946,495	± 7.8	37,316	±32.9	2,983,811	± 7.8
Sawtimber ² (M board feet)	2,485,156	± 7.9	32,015	±33.8	2,517,171	± 7.8
Net annual growth, 1982:						
Growing stock (M cubic feet)	20,006	± 7.9	2,354	±28.4	22,360	± 7.6
Sawtimber ¹ (M board feet)	86,782	±10.9	5,359	±84.5	92,141	±11.4
Sawtimber ² (M board feet)	71,543	±10.3	4,619	±84.3	76,162	±11.0
Annual mortality, 1982:						
Growing stock (M cubic feet)	908	±45.2	229	±67.2	1,137	±38.4
Sawtimber ¹ (M board feet)	3,643	±54.3	--	--	3,643	±54.3
Sawtimber ² (M board feet)	3,099	±54.7	--	--	3,099	±54.7

¹International $\frac{1}{4}$ -inch rule.

²Scribner rule.

Table 3.--Total land and water area by ownership class in Colorado's northern Front Range, 1983

Ownership class	Area
- - Acres - -	
Land:	
Public:	
National Forest	2,242,851
National Parks ¹	179,135
Other:	
Bureau of Land Management	202,067
Miscellaneous federal	108,730
State	397,906
County and municipal	256,032
Total other public	964,735
Total public	3,386,721
Private	4,684,661
Total land area	8,071,382
Census water	46,912
Total land and water ²	8,118,294

¹Not included with miscellaneous Federal, a component of other public, for purpose of clarity.

²U.S. Bureau of the Census, land and water area of the United States, 1980.

Table 4.--Total land area on State and privately owned land by major land class and ownership class in Colorado's northern Front Range, 1983

Land class	Ownership class		
	State	Nonindustrial private	Total
- - - - - Acres - - - - -			
Timberland:			
Reserved	15,737	--	15,737
Nonreserved	49,519	986,804	1,036,323
Total	65,256	986,804	1,052,060
Woodland:			
Reserved	1,603	--	1,603
Nonreserved	2,475	60,709	63,184
Total	4,078	60,709	64,787
Total forest land:			
Reserved	17,340	--	17,340
Nonreserved	51,994	1,047,513	1,099,507
Total	69,334	1,047,513	1,116,847
Nonforest land	328,572	3,637,148	3,965,720
Total land area	397,906	4,684,661	5,082,567

Table 5.--Area of forest land on State and privately owned land by forest type, ownership class, and land class in Colorado's northern Front Range, 1983

Forest type	Ownership class and land class					
	State		Nonindustrial private		All owners	
	Reserved	Nonreserved	Reserved	Nonreserved	Reserved	Nonreserved
- - - - - Acres - - - - -						
Douglas-fir	3,813	7,641	--	153,477	3,813	161,118
Ponderosa pine	5,839	26,939	--	518,972	5,839	545,911
Lodgepole pine	3,891	5,332	--	113,183	3,891	118,515
Limber pine	--	417	--	6,854	--	7,271
Spruce subalpine-fir	--	1,004	--	22,282	--	23,286
Spruce	--	2,437	--	44,903	--	47,340
Aspen	1,021	5,749	--	114,761	1,021	120,510
Cottonwood	1,173	--	--	12,372	1,173	12,372
Total timberland	15,737	49,519	--	986,804	15,737	1,036,323
Pinyon-juniper	231	697	--	12,445	231	13,142
Juniper	--	376	--	3,529	--	3,905
Oak	1,372	1,231	--	41,266	1,372	42,497
Riparian	--	171	--	3,469	--	3,640
Total woodland	1,603	2,475	--	60,709	1,603	63,184
Total all types	17,340	51,994	--	1,047,513	17,340	1,099,507
						1,116,847

Table 6.--Cubic feet of net volume in trees on State and privately owned forest land by species and ownership class in Colorado's northern Front Range, 1983

Species	Ownership class		
	State	Nonindustrial	Total
		private	
- - - - - Thousand cubic feet - - - - -			
Douglas-fir	7,668	167,391	175,059
Ponderosa pine	19,880	407,421	427,301
Lodgepole pine	6,902	143,754	150,656
Whitebark pine	397	6,857	7,254
Limber pine	658	12,351	13,009
Subalpine fir	549	11,423	11,972
White fir	85	2,154	2,239
Engelmann spruce	5,350	104,515	109,865
Aspen	2,850	52,662	55,512
Cottonwood	--	10,915	10,915
Total timberland species	44,339	919,443	963,782
Pinyon/juniper	585	12,048	12,633
Woodland hardwoods	385	8,759	9,144
Total woodland species	970	20,807	21,777
Total all species	45,309	940,250	985,559

Table 7.--Cubic feet of net annual growth in trees on State and privately owned forest land by species and ownership class in Colorado's northern Front Range, 1982

Species	Ownership class		
	State	Nonindustrial private	Total
- - - - Thousand cubic feet - - - -			
Douglas-fir	163	3,871	4,034
Ponderosa pine	400	8,202	8,602
Lodgepole pine	240	4,561	4,801
Whitebark pine	6	106	112
Limber pine	17	314	331
Subalpine fir	9	190	199
White fir	6	130	136
Engelmann spruce	84	1,710	1,794
Aspen	88	1,822	1,910
Cottonwood	--	444	444
Total timberland species	1,013	21,350	22,363
Pinyon/juniper	10	143	153
Woodland hardwoods	11	308	319
Total woodland species	21	451	472
Total all species	1,034	21,801	22,835

Table 8.--Cubic feet of annual mortality in trees on State and privately owned forest land by species and ownership class in Colorado's northern Front Range, 1982

Species	Ownership class		
	State	Nonindustrial private	Total
- - - - Thousand cubic feet - - - -			
Douglas-fir	5	145	150
Ponderosa pine	12	307	319
Lodgepole pine	--	112	112
Whitebark pine	--	--	--
Limber pine	--	--	--
Subalpine fir	--	--	--
White fir	--	--	--
Engelmann spruce	17	310	327
Aspen	14	215	229
Cottonwood	--	--	--
Total timberland species	48	1,089	1,137
Pinyon/juniper	--	--	--
Woodland hardwoods	--	--	--
Total woodland species	--	--	--
Total all species	48	1,089	1,137

Table 9.--Area of State and privately owned timberland by forest type, stand-size class, and productivity class in Colorado's northern Front Range, 1983

Forest type and stand-size class	Productivity class				Total acres
	85-119	50-84	20-49	0-19	
- - - - - Acres - - - - -					
Douglas-fir:					
Sawtimber	--	11,676	91,558	7,308	110,542
Poletimber	--	--	40,881	--	40,881
Sapling and seedling	--	--	3,892	--	3,892
Nonstocked	--	--	5,803	--	5,803
Total	--	11,676	142,134	7,308	161,118
Ponderosa pine:					
Sawtimber	--	27,854	392,164	3,892	423,910
Poletimber	--	--	55,644	--	55,644
Sapling and seedling	--	--	13,716	--	13,716
Nonstocked	--	--	52,641	--	52,641
Total	--	27,854	514,165	3,892	545,911
Lodgepole pine:					
Sawtimber	--	10,835	22,850	--	33,685
Poletimber	--	--	72,104	12,726	84,830
Sapling and seedling	--	--	--	--	--
Nonstocked	--	--	--	--	--
Total	--	10,835	94,954	12,726	118,515
Limber pine:					
Sawtimber	--	--	7,271	--	7,271
Poletimber	--	--	--	--	--
Sapling and seedling	--	--	--	--	--
Nonstocked	--	--	--	--	--
Total	--	--	7,271	--	7,271
Spruce-subalpine fir:					
Sawtimber	--	--	11,298	--	11,298
Poletimber	--	--	--	--	--
Sapling and seedling	--	--	4,717	--	4,717
Nonstocked	--	--	--	7,271	7,271
Total	--	--	16,015	7,271	23,286

(con.)

Table 9.--(con.)

Forest type and stand-size class	Productivity class				Total acres
	85-119	50-84	20-49	0-19	
- - - - - Acres - - - - -					
Spruce:					
Sawtimber	--	19,960	21,962	--	41,922
Poletimber	--	--	5,418	--	5,418
Sapling and seedling	--	--	--	--	--
Nonstocked	--	--	--	--	--
Total	--	19,960	27,380	--	47,340
Aspen:					
Sawtimber	--	--	14,580	--	14,580
Poletimber	--	11,922	44,818	--	56,740
Sapling and seedling	--	--	44,603	4,587	49,190
Nonstocked	--	--	--	--	--
Total	--	11,922	104,001	4,587	120,510
Cottonwood:					
Sawtimber	--	6,186	--	--	6,186
Poletimber	--	6,186	--	--	6,186
Sapling and seedling	--	--	--	--	--
Nonstocked	--	--	--	--	--
Total	--	12,372	--	--	12,372
All types:					
Sawtimber	--	76,511	561,683	11,200	649,394
Poletimber	--	18,108	218,865	12,726	249,699
Sapling and seedling	--	--	66,928	4,587	71,515
Nonstocked	--	--	58,444	7,271	65,715
Total	--	94,619	905,920	35,784	1,036,323

Table 10.--Area of State owned timberland by forest type, stand-size class, and productivity class in Colorado's northern Front Range, 1983

Forest type and stand-size class	Productivity class				Total acres
	85-119	50-84	20-49	0-19	
- - - - - Acres - - - - -					
Douglas-fir:					
Sawtimber	--	396	4,541	502	5,439
Poletimber	--	--	1,602	--	1,602
Sapling and seedling	--	--	132	--	132
Nonstocked	--	--	468	--	468
Total	--	396	6,743	502	7,641
- - - - -					
Ponderosa pine:					
Sawtimber	--	1,733	18,445	132	20,310
Poletimber	--	--	2,678	--	2,678
Sapling and seedling	--	--	668	--	668
Nonstocked	--	--	3,283	--	3,283
Total	--	1,733	25,074	132	26,939
- - - - -					
Lodgepole pine:					
Sawtimber	--	580	492	--	1,072
Poletimber	--	--	3,467	793	4,260
Sapling and seedling	--	--	--	--	--
Nonstocked	--	--	--	--	--
Total	--	580	3,959	793	5,332
- - - - -					
Limber pine:					
Sawtimber	--	--	417	--	417
Poletimber	--	--	--	--	--
Sapling and seedling	--	--	--	--	--
Nonstocked	--	--	--	--	--
Total	--	--	417	--	417
- - - - -					
Spruce-subalpine fir:					
Sawtimber	--	--	587	--	587
Poletimber	--	--	--	--	--
Sapling and seedling	--	--	--	--	--
Nonstocked	--	--	--	417	417
Total	--	--	587	417	1,004

(con.)

Table 10.--(con.)

Forest type and stand-size class	Productivity class				Total acres
	85-119	50-84	20-49	0-19	
- - - - - Acres - - - - -					
Spruce:					
Sawtimber	--	1,124	1,023	--	2,147
Poletimber	--	--	290	--	290
Sapling and seedling	--	--	--	--	--
Nonstocked	--	--	--	--	--
Total	--	1,124	1,313	--	2,437
Aspen:					
Sawtimber	--	--	919	--	919
Poletimber	--	643	2,062	--	2,705
Sapling and seedling	--	--	2,030	95	2,125
Nonstocked	--	--	--	--	--
Total	--	643	5,011	95	5,749
Cottonwood:					
Sawtimber	--	--	--	--	--
Poletimber	--	--	--	--	--
Sapling and seedling	--	--	--	--	--
Nonstocked	--	--	--	--	--
Total	--	--	--	--	--
All types:					
Sawtimber	--	3,833	26,424	634	30,891
Poletimber	--	643	10,099	793	11,535
Sapling and seedling	--	--	2,830	95	2,925
Nonstocked	--	--	3,751	417	4,168
Total	--	4,476	43,104	1,939	49,519

Table 11.--Area of nonindustrial privately owned timberland by forest type, stand-size class, and productivity class in Colorado's northern Front Range, 1983

Forest type and stand-size class	Productivity class				Total acres
	85-119	50-84	20-49	0-19	
- - - - - Acres - - - - -					
Douglas-fir:					
Sawtimber	--	11,280	87,017	6,806	105,103
Poletimber	--	--	39,279	--	39,279
Sapling and seedling	--	--	3,760	--	3,760
Nonstocked	--	--	5,335	--	5,335
Total	--	11,280	135,391	6,806	153,477
- - - - - Acres - - - - -					
Ponderosa pine:					
Sawtimber	--	26,121	373,719	3,760	403,600
Poletimber	--	--	52,966	--	52,966
Sapling and seedling	--	--	13,048	--	13,048
Nonstocked	--	--	49,358	--	49,358
Total	--	26,121	489,091	3,760	518,972
- - - - - Acres - - - - -					
Lodgepole pine:					
Sawtimber	--	10,255	22,358	--	32,613
Poletimber	--	--	68,637	11,933	80,570
Sapling and seedling	--	--	--	--	--
Nonstocked	--	--	--	--	--
Total	--	10,255	90,995	11,933	113,183
- - - - - Acres - - - - -					
Limber pine:					
Sawtimber	--	--	6,854	--	6,854
Poletimber	--	--	--	--	--
Sapling and seedling	--	--	--	--	--
Nonstocked	--	--	--	--	--
Total	--	--	6,854	--	6,854
- - - - - Acres - - - - -					
Spruce-subalpine fir:					
Sawtimber	--	--	10,711	--	10,711
Poletimber	--	--	--	--	--
Sapling and seedling	--	--	4,717	--	4,717
Nonstocked	--	--	--	6,854	6,854
Total	--	--	15,428	6,854	22,282

(con.)

Table 11.--(con.)

Forest type and stand-size class	Productivity class				Total acres
	85-119	50-84	20-49	0-19	
- - - - - Acres - - - - -					
Spruce:					
Sawtimber	--	18,836	20,939	--	39,775
Poletimber	--	--	5,128	--	5,128
Sapling and seedling	--	--	--	--	--
Nonstocked	--	--	--	--	--
Total	--	18,836	26,067	--	44,903
<hr/>					
Aspen:					
Sawtimber	--	--	13,661	--	13,661
Poletimber	--	11,279	42,756	--	54,035
Sapling and seedling	--	--	42,573	4,492	47,065
Nonstocked	--	--	--	--	--
Total	--	11,279	98,990	4,492	114,761
<hr/>					
Cottonwood:					
Sawtimber	--	6,186	--	--	6,186
Poletimber	--	6,186	--	--	6,186
Sapling and seedling	--	--	--	--	--
Nonstocked	--	--	--	--	--
Total	--	12,372	--	--	12,372
<hr/>					
All types:					
Sawtimber	--	72,678	535,259	10,566	618,503
Poletimber	--	17,465	208,766	11,933	238,164
Sapling and seedling	--	--	64,098	4,492	68,590
Nonstocked	--	--	54,693	6,854	61,547
Total	--	90,143	862,816	33,845	986,804

Table 12.--Area of State and privately owned timberland by stand volume and ownership class in Colorado's northern Front Range, 1983

Stand volume per acre ¹	Ownership class		
	State	Nonindustrial private	Total
- - - - - Acres - - - - -			
Less than 1,500 board feet	20,081	378,183	398,264
1,500 to 4,999 board feet	22,503	464,551	487,054
5,000 to 9,999 board feet	5,562	117,464	123,026
10,000 board feet or more	1,373	26,606	27,979
All classes	49,519	986,804	1,036,323

¹International $\frac{1}{4}$ -inch rule.

Table 13.--Area of State and privately owned timberland by forest type and area condition class in Colorado's northern Front Range, 1983

Forest type	Area condition class										
	10	20	30	40	50	60	70	80	90	Nonstocked	All classes
Acres											
Douglas-fir	--	--	--	3,891	22,432	43,911	31,732	--	53,349	5,803	161,118
Ponderosa pine	--	--	--	31,572	166,733	175,894	3,892	115,179	52,641	545,911	118,515
Lodgepole pine	--	--	32,900	31,547	32,415	9,127	5,418	7,108	--	7,271	7,271
Limber pine	--	--	--	--	--	--	--	--	7,271	5,418	7,271
Spruce-subalpine fir	--	--	--	--	10,597	--	--	--	22,165	--	23,286
Spruce	--	--	--	--	--	12,689	12,486	--	--	47,340	47,340
Aspen	--	--	--	--	76,521	38,187	5,802	--	--	120,510	120,510
Cottonwood	--	--	--	--	6,186	--	--	6,186	--	12,372	12,372
All types	--	--	--	36,791	172,669	300,121	235,041	9,310	216,676	65,715	1,036,323

Table 14.--Number of growing-stock trees on State and privately owned timberland by species and diameter class in Colorado's northern Front Range, 1983

Species	Diameter class (inches at breast height)										All classes					
	1.0- 2.9	3.0- 4.9	5.0- 6.9	7.0- 8.9	9.0- 10.9	9.0- 12.9	13.0- 14.9	15.0- 16.9	17.0- 18.9	19.0- 20.9						
Thousand trees																
Douglas-fir	8,924	14,304	10,999	6,355	4,029	2,486	972	463	407	227	68	30	13	--	--	49,277
Ponderosa pine	14,031	14,838	16,591	12,532	9,518	7,608	4,032	2,668	1,002	288	170	60	29	7	20	83,394
Lodgepole pine	4,899	13,305	13,930	9,365	2,738	1,298	374	88	22	--	--	--	--	--	--	46,019
Whitebark pine	1,053	728	277	153	448	152	--	82	--	--	--	--	--	--	--	2,893
Limber pine	1,100	--	1,022	1,361	102	139	45	53	36	--	--	--	--	--	--	3,858
Subalpine fir	1,625	2,167	207	424	478	165	--	60	--	--	--	--	--	--	--	5,126
White fir	--	--	306	162	--	--	--	--	12	--	--	--	--	--	--	480
Engelmann spruce	11,620	4,705	1,304	2,368	2,449	848	707	474	241	102	33	61	--	10	--	24,922
Total softwoods	43,252	50,047	44,636	32,720	19,762	12,696	6,130	3,888	1,708	617	283	151	42	17	20	215,969
Aspen	25,935	22,817	14,927	4,471	1,270	297	59	--	37	28	--	--	--	--	--	69,776
Cottonwood	--	--	892	425	549	66	--	37	37	28	--	--	--	--	--	2,013
Total hardwoods	25,935	22,817	15,819	4,896	1,819	363	59	37	28	--	--	--	--	--	--	71,789
All species	69,187	72,864	60,455	37,616	21,581	13,059	6,189	3,925	1,736	617	283	151	42	17	36	287,758

Table 15.--Number of cull and salvable dead trees on State and privately owned timberland by ownership class, and softwoods and hardwoods in Colorado's northern Front Range, 1983

Ownership class and species group	Cull trees			Salvable dead trees	All dead trees
	Sound	Rotten	Total		
- - - - - Thousand trees - - - - -					
State:					
Softwoods	16	20	36	396	432
Hardwoods	--	15	15	202	217
Total	16	35	51	598	649
- - - - - Thousand trees - - - - -					
Nonindustrial private:					
Softwoods	318	560	878	7,050	7,928
Hardwoods	--	480	480	3,730	4,210
Total	318	1,040	1,358	10,780	12,138
- - - - - Thousand trees - - - - -					
Total:					
Softwoods	334	580	914	7,446	8,360
Hardwoods	--	495	495	3,932	4,427
Total	334	1,075	1,409	11,378	12,787

Table 16.--Net volume of growing stock on State and privately owned timberland by ownership class, forest type, and stand-size class in Colorado's northern Front Range, 1983

Ownership class	Forest type	Stand-size class				All classes
		Sawtimber	Poletimber	Sapling/seedling	Nonstocked	
- - - - - Thousand cubic feet - - - - -						
State:						
	Douglas-fir	6,335	1,397	39	--	7,771
	Ponderosa pine	17,248	2,323	238	175	19,984
	Lodgepole pine	2,330	4,157	--	--	6,487
	Limber pine	274	--	--	--	274
	Spruce-subalpine fir	1,388	--	--	90	1,478
	Spruce	4,303	488	--	--	4,791
	Aspen	798	1,985	765	--	3,548
	Cottonwood	--	--	--	--	--
	All types	32,676	10,350	1,042	265	44,333
Nonindustrial private:						
	Douglas-fir	122,135	36,592	1,122	--	159,849
	Ponderosa pine	355,470	47,700	4,743	2,936	410,849
	Lodgepole pine	56,825	84,981	--	--	141,806
	Limber pine	4,504	--	--	--	4,504
	Spruce-subalpine fir	24,722	--	6,158	1,467	32,347
	Spruce	78,785	8,617	--	--	87,402
	Aspen	11,714	41,964	17,840	--	71,518
	Cottonwood	2,696	8,219	--	--	10,915
	All types	656,851	228,073	29,863	4,403	919,190
Total:						
	Douglas-fir	128,470	37,989	1,161	--	167,620
	Ponderosa pine	372,718	50,023	4,981	3,111	430,833
	Lodgepole pine	59,155	89,138	--	--	148,293
	Limber pine	4,778	--	--	--	4,778
	Spruce-subalpine fir	26,110	--	6,158	1,557	33,825
	Spruce	83,088	9,105	--	--	92,193
	Aspen	12,512	43,949	18,605	--	75,066
	Cottonwood	2,696	8,219	--	--	10,915
	All types	689,527	238,423	30,905	4,668	963,523

Table 17.--Net volume of sawtimber (International $\frac{1}{4}$ -inch rule) on State and privately owned timberland by ownership class, forest type, and stand-size class in Colorado's northern Front Range, 1983

Ownership class	Forest type	Stand-size class				All classes
		Sawtimber	Poletimber	Sapling/ seedling	Nonstocked	
- - - Thousand board feet, International $\frac{1}{4}$ -inch rule - - -						
State:						
	Douglas-fir	22,175	2,744	77	--	24,996
	Ponderosa pine	66,821	4,376	867	724	72,788
	Lodgepole pine	7,459	3,456	--	--	10,915
	Limber pine	920	--	--	--	920
	Spruce-subalpine fir	5,652	--	--	353	6,005
	Spruce	17,170	926	--	--	18,096
	Aspen	2,266	1,745	1,367	--	5,378
	Cottonwood	--	--	--	--	--
	All types	122,463	13,247	2,311	1,077	139,098
Nonindustrial private:						
	Douglas-fir	439,745	72,330	2,185	--	514,260
	Ponderosa pine	1,369,379	89,680	17,252	12,095	1,488,406
	Lodgepole pine	169,144	80,714	--	--	249,858
	Limber pine	15,125	--	--	--	15,125
	Spruce-subalpine fir	100,375	--	13,206	5,817	119,398
	Spruce	310,413	16,358	--	--	326,771
	Aspen	32,684	49,738	31,590	--	114,012
	Cottonwood	12,615	4,268	--	--	16,883
	All types	2,449,480	313,088	64,233	17,912	2,844,713
Total:						
	Douglas-fir	461,920	75,074	2,262	--	539,256
	Ponderosa pine	1,436,200	94,056	18,119	12,819	1,561,194
	Lodgepole pine	176,603	84,170	--	--	260,773
	Limber pine	16,045	--	--	--	16,045
	Spruce-subalpine fir	106,027	--	13,206	6,170	125,403
	Spruce	327,583	17,284	--	--	344,867
	Aspen	34,950	51,483	32,957	--	119,390
	Cottonwood	12,615	4,268	--	--	16,883
	All types	2,571,943	326,335	66,544	18,989	2,983,811

Table 18.--Net volume of sawtimber (Scribner rule) on State and privately owned timberland by ownership class, forest type, and stand-size class in Colorado's northern Front Range, 1983

Ownership class	Forest type	Stand-size class				All classes
		Sawtimber	Poletimber	Sapling/ seedling	Nonstocked	
- - - - - Thousand board feet, Scribner rule - - - - -						
State:						
	Douglas-fir	18,770	2,327	63	--	21,160
	Ponderosa pine	56,319	3,595	741	591	61,246
	Lodgepole pine	6,334	2,914	--	--	9,248
	Limber pine	776	--	--	--	776
	Spruce-subalpine fir	4,756	--	--	302	5,058
	Spruce	14,370	786	--	--	15,156
	Aspen	1,912	1,470	1,161	--	4,543
	Cottonwood	--	--	--	--	--
	All types	103,237	11,092	1,965	893	117,187
Nonindustrial private:						
	Douglas-fir	372,640	60,773	1,807	--	435,220
	Ponderosa pine	1,155,845	72,741	14,731	9,873	1,253,190
	Lodgepole pine	144,093	68,880	--	--	212,973
	Limber pine	12,751	--	--	--	12,751
	Spruce-subalpine fir	84,460	--	11,754	4,974	101,188
	Spruce	260,235	13,899	--	--	274,134
	Aspen	27,539	41,738	26,854	--	96,131
	Cottonwood	10,973	3,424	--	--	14,397
	All types	2,068,536	261,455	55,146	14,847	2,399,984
Total:						
	Douglas-fir	391,410	63,100	1,870	--	456,380
	Ponderosa pine	1,212,164	76,336	15,472	10,464	1,314,436
	Lodgepole pine	150,427	71,794	--	--	222,221
	Limber pine	13,527	--	--	--	13,527
	Spruce-subalpine fir	89,216	--	11,754	5,276	106,246
	Spruce	274,605	14,685	--	--	289,290
	Aspen	29,451	43,208	28,015	--	100,674
	Cottonwood	10,973	3,424	--	--	14,397
	All types	2,171,773	272,547	57,111	15,740	2,517,171

Table 19.--Net volume of growing stock on State and privately owned timberland by ownership class and species in Colorado's northern Front Range, 1983

Species	Ownership class		
	State	Nonindustrial private	Total
- - - - - Thousand cubic feet - - - - -			
Douglas-fir	7,666	167,329	174,995
Ponderosa pine	19,876	407,229	427,105
Lodgepole pine	6,902	143,754	150,656
Whitebark pine	397	6,857	7,254
Limber pine	658	12,351	13,009
Subalpine fir	549	11,423	11,972
White fir	85	2,154	2,239
Engelmann Spruce	5,350	104,516	109,866
Total softwoods	41,483	855,613	897,096
Aspen	2,850	52,662	55,512
Cottonwood	--	10,915	10,915
Total hardwoods	2,850	63,577	66,427
All species	44,333	919,190	963,523

Table 20.--Net volume of sawtimber (International $\frac{1}{4}$ -inch rule) on State and privately owned timberland by ownership class and species in Colorado's northern Front Range, 1983

Species	Ownership class		
	State	Nonindustrial private	Total
- - Thousand board feet, International $\frac{1}{4}$ -inch rule - -			
Douglas-fir	25,466	559,772	585,238
Ponderosa pine	73,892	1,494,410	1,568,302
Lodgepole pine	12,154	257,220	269,374
Whitebark pine	1,176	20,111	21,287
Limber pine	1,085	20,755	21,840
Subalpine fir	1,747	34,495	36,242
White fir	106	3,035	3,141
Engelmann Spruce	22,405	418,666	441,071
Total softwoods	138,031	2,808,464	2,946,495
Aspen	1,067	19,366	20,433
Cottonwood	--	16,883	16,883
Total hardwoods	1,067	36,249	37,316
All species	139,098	2,844,713	2,983,811

Table 21.--Net volume of sawtimber (Scribner rule) on State and privately owned timberland by ownership class and species in Colorado's northern Front Range, 1983

Species	Ownership class		
	State	Nonindustrial private	Total
- - - - Thousand board feet, Scribner rule - - - -			
Douglas-fir	21,652	476,741	498,393
Ponderosa pine	61,996	1,253,984	1,315,980
Lodgepole pine	10,363	219,759	230,122
Whitebark pine	960	16,431	17,391
Limber pine	904	17,272	18,176
Subalpine fir	1,485	29,482	30,967
White fir	92	2,624	2,716
Engelmann Spruce	18,817	352,594	371,411
Total softwoods	116,269	2,368,887	2,485,156
Aspen	918	16,700	17,618
Cottonwood	--	14,397	14,397
Total hardwoods	918	31,097	32,015
All species	117,187	2,399,984	2,517,171

Table 22.--Net volume of growing stock on State and privately owned timberland by species and diameter class in Colorado's northern Front Range, 1983

Species	Diameter class (inches at breast height)										A11 classes
	5.0- 6.9	7.0- 8.9	9.0- 10.9	11.0- 12.9	13.0- 14.9	15.0- 16.9	17.0- 18.9	19.0- 20.9	21.0- 22.9	23.0- 24.9	
- - - - - Thousand cubic feet - - - - -											
Douglas-fir	17,516	26,367	34,277	31,258	19,060	12,326	15,930	10,419	3,972	2,699	1,171
Ponderosa pine	26,161	49,034	64,877	89,795	73,133	63,550	31,500	11,762	8,059	3,803	2,413
Lodgepole pine	31,859	51,570	32,090	22,006	8,793	3,074	1,264	--	--	--	--
Whitebark pine	455	633	3,155	1,331	--	1,680	--	--	--	--	7,254
Limber pine	1,916	5,861	540	1,404	696	1,450	1,142	--	--	--	13,009
Subalpine fir	251	2,822	4,237	3,171	--	1,491	--	--	--	--	11,972
White fir	387	1,123	--	--	--	--	--	729	--	--	2,239
Engelmann spruce	1,764	11,225	24,349	13,718	17,384	17,040	10,909	5,628	2,488	4,269	1,092
Total softwoods	80,309	148,635	163,525	162,683	119,066	100,611	60,745	27,809	15,248	10,771	3,584
Aspen	22,876	17,007	11,098	3,691	840	--	--	--	--	--	--
Cottonwood	896	1,996	4,488	839	--	656	588	--	--	--	1,452
Total hardwoods	23,772	19,003	15,586	4,530	840	656	588	--	--	--	1,452
All species	104,081	167,638	179,111	167,213	119,906	101,267	61,333	27,809	15,248	10,771	3,584
											1,749
											3,813
											963,523
											897,096

Table 23.--Net volume of sawtimber (International 4-inch rule) on State and privately owned timberland by species and diameter class in Colorado's northern Front Range, 1983

Species	Diameter class (inches at breast height)										All classes
	9.0- 10.9	11.0- 12.9	13.0- 14.9	15.0- 16.9	17.0- 18.9	19.0- 20.9	21.0- 22.9	23.0- 24.9	25.0- 26.9	27.0- 28.9	
- - - - - Thousand board feet, International 4-inch rule - - - - -											
Douglas-fir	113,873	133,965	91,953	62,378	83,891	55,511	21,502	15,465	6,700	3,541	12,763
Ponderosa pine	209,471	375,808	348,121	317,779	162,869	61,960	42,638	20,358	12,994	3,541	1,568,302
Lodgepole pine	110,709	94,442	41,780	15,851	6,592	--	--	--	--	--	269,374
Whitebark pine	9,825	4,119	--	7,343	--	--	--	--	--	--	21,287
Limber pine	1,622	4,747	2,802	6,977	5,692	--	--	--	--	--	21,840
Subalpine fir	14,238	14,944	--	7,060	--	--	--	--	--	--	36,242
White fir	--	--	--	--	--	3,141	--	--	--	--	3,141
Engelmann spruce	84,419	62,367	84,372	84,965	54,717	28,481	13,106	22,474	--	6,170	--
Total softwoods	544,157	690,392	569,028	502,353	313,761	145,952	80,387	58,297	19,694	9,711	12,763
Aspen	XXXXX	16,559	3,874	--	--	--	--	--	--	--	20,433
Cottonwood	XXXXX	4,268	--	3,217	2,790	--	--	--	--	6,608	16,883
Total hardwoods	XXXXX	20,827	3,874	3,217	2,790	--	--	--	--	6,608	37,316
All species	544,157	711,219	572,902	505,570	316,551	145,952	80,387	58,297	19,694	9,711	19,371
											2,983,811

Table 24.--Net volume of sawtimber (Scribner rule) on State and privately owned timberland by species and diameter class in Colorado's northern Front Range, 1983

Species	Diameter class (inches at breast height)									All classes
	9.0-	11.0-	13.0-	15.0-	17.0-	19.0-	21.0-	23.0-	25.0-	
- - - - - Thousand board feet, Scribner rule - - - - -										
Douglas-fir	101,167	116,595	77,153	51,354	68,331	45,302	18,266	13,762	5,963	--
Ponderosa pine	154,595	309,863	297,759	275,316	142,352	54,476	37,589	18,014	11,525	3,144
Lodgepole pine	95,400	80,472	35,265	13,246	5,739	--	--	--	--	--
Whitebark pine	7,538	3,638	--	6,215	--	--	--	--	--	--
Limber pine	973	4,162	2,394	5,870	4,777	--	--	--	--	--
Subalpine fir	12,605	12,544	--	5,818	--	--	--	--	--	--
White fir	--	--	--	--	--	--	--	--	--	30,967
Engelmann spruce	74,324	53,096	69,737	69,053	44,546	23,789	11,615	19,760	--	2,716
Total softwoods	446,602	580,370	482,308	426,872	265,745	124,067	70,186	51,536	17,488	8,635
Aspen	XXXXX	14,290	3,328	--	2,708	2,384	--	--	--	--
Cottonwood	XXXXX	3,424	--	--	--	--	--	--	--	17,618
Total hardwoods	XXXXX	17,714	3,328	2,708	2,384	--	--	--	--	5,881
All species	446,602	598,084	485,636	429,580	268,129	124,067	70,186	51,536	17,488	8,635
										32,015

- - - - - Thousand cubic feet - - - - -										
Sawtimber trees:										
Sawlog portion										
Upper-stem portion										
Total										
Poletimber trees										
All growing stock trees										
Sound cull trees										
Rotten cull trees										
Salvable dead trees										
All timber										

Table 25.--Net volume of timber on State and privately owned timberland by class of timber, and softwoods and hardwoods in Colorado's northern Front Range, 1983

Class of timber	Softwoods	Hardwoods	All classes
- - - - - Thousand cubic feet - - - - -			
Sawtimber trees:			
Sawlog portion	574,418	6,148	580,566
Upper-stem portion	93,733	1,918	95,651
Total	668,151	8,066	676,217
Poletimber trees	228,945	58,361	287,306
All growing stock trees	897,096	66,427	963,523
Sound cull trees	392	--	392
Rotten cull trees	1,048	759	1,807
Salvable dead trees	31,750	4,509	36,259
All timber	930,286	71,695	1,001,981

Table 26.--Net volume of growing stock on State and privately owned timberland by forest type and species in Colorado's northern Front Range, 1983

Forest type	Species							
	Douglas-fir	Ponderosa pine	Lodgepole pine	Whitebark pine	Limber pine	Subalpine fir	White fir	Engelmann spruce
- - - - - Thousand cubic feet - - - - -								
Douglas-fir	115,130	34,311	4,058	--	4,604	--	1,852	4,512
Ponderosa pine	39,043	376,851	7,717	--	1,080	--	--	1,732
Lodgepole pine	6,722	2,834	131,906	--	468	--	--	5,897
Limber pine	1,514	--	--	455	2,809	--	--	--
Spruce-subalpine fir	--	--	2,960	1,786	11,263	--	--	17,816
Spruce	3,400	--	2,865	3,174	--	709	--	78,351
Aspen	9,186	13,109	4,110	665	2,262	--	387	1,538
Cottonwood	--	--	--	--	--	--	--	--
All types	174,995	427,105	150,656	7,254	13,009	11,972	2,239	109,866
- - - - - Thousand cubic feet - - - - -								
Forest type	Species							
	Total softwoods	Aspen	Cottonwood	Total hardwoods	Total hardwoods	Total hardwoods	All species	
Douglas-fir	164,467	3,153	--	3,153	3,153	167,620		
Ponderosa pine	426,423	4,410	--	4,410	4,410	430,833		
Lodgepole pine	147,827	466	--	466	466	148,293		
Limber pine	4,778	--	--	--	--	4,778		
Spruce-subalpine fir	33,825	--	--	--	--	33,825		
Spruce	88,499	3,694	--	3,694	3,694	92,193		
Aspen	31,277	43,789	--	43,789	43,789	75,066		
Cottonwood	--	--	10,915	10,915	10,915	10,915		
All types	897,096	55,512	10,915	66,427	66,427	963,523		

Table 26.(con.)

Table 27.--Net volume of sawtimber (International 4-inch rule) on State and privately owned timberland by forest type and species in Colorado's northern Front Range, 1983

Forest type	Species							
	Douglas-fir	Ponderosa pine	Lodgepole pine	Whitetop pine	Limber pine	Subalpine fir	White fir	Engelmann spruce
- - - - - Thousand board feet, International 4-inch rule - - - - -								
Douglas-fir	379,711	117,701	12,355	--	5,711	--	3,141	15,880
Ponderosa pine	134,177	1,398,276	18,927	--	--	--	--	5,273
Lodgepole pine	17,984	5,071	216,099	--	1,267	--	--	20,352
Limber pine	7,336	--	--	--	8,709	--	--	--
Spruce-subalpine fir	--	--	--	8,604	6,153	34,176	--	76,470
Spruce	6,161	--	6,613	10,454	--	2,066	--	319,573
Aspen	39,869	47,254	15,380	2,229	--	--	--	3,523
Cottonwood	--	--	--	--	--	--	--	--
All types	585,238	1,568,302	269,374	21,287	21,840	36,242	3,141	441,071

Table 27.(con.)

Forest type	Species					
	Total softwoods	Aspen	Cottonwood	Total hardwoods	Total	All species
- - - - - Thousand board feet, International 4-inch rule - - - - -						
Douglas-fir	534,499	4,757	--	4,757	539,256	
Ponderosa pine	1,556,653	4,541	--	4,541	1,561,194	
Lodgepole pine	260,773	--	--	--	260,773	
Limber pine	16,045	--	--	--	16,045	
Spruce-subalpine fir	125,403	--	--	--	125,403	
Spruce	344,867	--	--	--	344,867	
Aspen	108,255	11,135	--	11,135	119,390	
Cottonwood	--	--	16,883	16,883	16,883	
All types	2,946,495	20,433	16,883	37,316	2,983,811	

Table 28.--Net volume of sawtimber (Scribner rule) on State and privately owned timberland by forest type and species in Colorado's northern Front Range, 1983

Forest type	Species							
	Douglas-fir	Ponderosa pine	Lodgepole pine	Whitebark pine	Limber pine	Subalpine fir	White fir	Engelmann spruce
- - - - - Thousand board feet, Scribner rule - - - - -								
Douglas-fir	323,346	97,357	10,598	--	4,801	--	2,716	13,469
Ponderosa pine	114,459	1,175,340	16,388	--	--	--	--	4,344
Lodgepole pine	15,526	3,832	184,419	--	1,068	--	--	17,376
Limber pine	6,121	--	--	--	7,406	--	--	--
Spruce-subalpine fir	--	--	--	7,433	4,901	29,129	--	64,783
Spruce	5,483	--	5,600	7,999	--	1,838	--	268,370
Aspen	33,458	39,451	13,117	1,959	--	--	--	3,069
Cottonwood	--	--	--	--	--	--	--	--
All types	498,393	1,315,980	230,122	17,391	18,176	30,967	2,716	371,411

Table 28. (con.)

Forest type	Species					
	Total softwoods	Aspen	Cottonwood	Total hardwoods	Total	All species
- - - - - Thousand board feet, Scribner rule - - - - -						
Douglas-fir	452,287	4,093	--	4,093	456,380	
Ponderosa pine	1,310,531	3,905	--	3,905	1,314,436	
Lodgepole pine	222,221	--	--	--	222,221	
Limber pine	13,527	--	--	--	13,527	
Spruce-subalpine fir	106,246	--	--	--	106,246	
Spruce	289,290	--	--	--	289,290	
Aspen	91,054	9,620	--	9,620	100,674	
Cottonwood	--	--	14,397	14,397	14,397	
All types	2,485,156	17,618	14,397	32,015	2,517,171	

Table 29.--Net annual growth of growing stock on State and privately owned timberland by ownership class and species in Colorado's northern Front Range, 1982

Species	Ownership class		
	State	Nonindustrial private	Total
- - - - - Thousand cubic feet - - - - -			
Douglas-fir	163	3,870	4,033
Ponderosa pine	400	8,200	8,600
Lodgepole pine	241	4,560	4,801
Whitebark pine	6	106	112
Limber pine	17	314	331
Subalpine fir	9	190	199
White fir	6	130	136
Engelmann spruce	84	1,710	1,794
Total softwoods	926	19,080	20,006
Aspen	88	1,822	1,910
Cottonwood	--	444	444
Total hardwoods	88	2,266	2,354
All species	1,014	21,346	22,360

Table 30.--Net annual growth of sawtimber (International $\frac{1}{4}$ -inch rule) on State and privately owned timberland by ownership class and species in Colorado's northern Front Range, 1982

Species	Ownership class		
	State	Nonindustrial private	Total
- - Thousand board feet, International $\frac{1}{4}$ -inch rule - - -			
Douglas-fir	503	13,710	14,213
Ponderosa pine	2,553	49,967	52,520
Lodgepole pine	193	4,709	4,902
Whitebark pine	19	341	360
Limber pine	25	457	482
Subalpine fir	25	2,091	2,116
White fir	1	22	23
Engelmann spruce	595	11,571	12,166
Total softwoods	3,914	82,868	86,782
Aspen	258	4,829	5,087
Cottonwood	--	272	272
Total hardwoods	258	5,101	5,359
All species	4,172	87,969	92,141

Table 31.--Net annual growth of sawtimber (Scribner rule) on State and privately owned timberland by ownership class and species in Colorado's northern Front Range, 1982

Species	Ownership class		
	State	Nonindustrial private	Total
- - - - - Thousand board feet, Scribner rule - - - - -			
Douglas-fir	423	11,657	12,080
Ponderosa pine	2,011	40,174	42,185
Lodgepole pine	167	4,094	4,261
Whitebark pine	18	314	332
Limber pine	20	367	387
Subapline fir	21	1,828	1,849
White fir	1	23	24
Engelmann spruce	508	9,917	10,425
Total softwoods	3,169	68,374	71,543
Aspen	222	4,149	4,371
Cottonwood	--	248	248
Total hardwoods	222	4,397	4,619
All species	3,391	72,771	76,162

Table 32.—Net annual growth of growing stock on State and privately owned timberland by species and diameter class in Colorado's northern Front Range, 1982

Species	Diameter class (inches at breast height)										All classes		
	5.0- 6.9	7.0- 8.9	9.0- 10.9	11.0- 12.9	13.0- 14.9	15.0- 16.9	17.0- 18.9	19.0- 20.9	21.0- 22.9	23.0- 24.9	25.0- 26.9	27.0- 28.9	29.0+ --
- - - - - Thousand cubic feet - - - - -												- - - - -	
Douglas-fir	1,153	675	868	690	312	121	178	-39	43	26	6	--	--
Ponderosa pine	1,638	1,195	1,545	1,603	1,170	789	430	100	63	48	13	1	5
Lodgepole pine	2,882	1,160	357	292	81	27	2	--	--	--	--	--	--
Whitebark pine	12	20	62	12	--	6	--	--	--	--	--	--	112
Limber pine	115	118	19	34	24	9	12	--	--	--	--	--	331
Subalpine fir	12	64	76	39	--	8	--	--	--	--	--	--	199
White fir	52	78	--	--	--	--	--	6	--	--	--	--	136
Engelmann spruce	247	302	541	235	280	223	-198	42	12	105	--	5	--
Total softwoods	6,111	3,612	3,468	2,905	1,867	1,183	424	103	124	179	19	6	5
- - - - - Thousand cubic feet - - - - -												- - - - -	
Aspen	1,422	303	116	60	9	--	--	--	--	--	--	--	--
Cottonwood	202	42	143	20	--	9	8	--	--	--	--	20	1,910 444
Total hardwoods	1,624	345	259	80	9	9	8	--	--	--	--	20	2,354
All species	7,735	3,957	3,727	2,985	1,876	1,192	432	103	124	179	19	6	25
- - - - - Thousand cubic feet - - - - -												- - - - -	

Table 33.--Net annual growth of sawtimber (International 4-inch rule) on State and privately owned timberland by species and diameter class in Colorado's northern Front Range, 1982

Species	Diameter class (inches at breast height)										All classes
	9.0- 10.9	11.0- 12.9	13.0- 14.9	15.0- 16.9	17.0- 18.9	19.0- 20.9	21.0- 22.9	23.0- 24.9	25.0- 26.9	27.0- 28.9	
Thousand board feet, International 4-inch rule											
Douglas-fir	6,415	4,024	1,796	689	1,017	-175	248	166	33	--	--
Ponderosa pine	27,946	9,537	6,798	4,532	2,432	558	347	264	75	6	25
Lodgepole pine	2,626	1,624	493	145	14	--	--	--	--	--	4,902
Whitebark pine	276	51	--	33	--	--	--	--	--	--	360
Limber pine	57	183	121	52	69	--	--	--	--	--	482
Subalpine fir	1,861	213	--	42	--	--	--	--	--	--	2,116
White fir	--	--	--	--	--	--	--	--	--	--	23
Engelmann spruce	8,312	1,304	1,509	1,162	-1,039	211	73	600	--	34	--
Total softwoods	47,493	16,936	10,717	6,655	2,493	594	691	1,030	108	40	25
											86,782
Aspen											
Aspen	XXXXX	5,037	50	--	--	--	--	--	--	--	5,087
Cottonwood	XXXXX	102	--	41	33	--	--	--	--	96	272
Total hardwoods	XXXXX	5,139	50	41	33	--	--	--	--	96	5,359
All species	47,493	22,075	10,767	6,696	2,526	594	691	1,030	108	40	121
											92,141

Table 34.--Net annual growth of sawtimber (Scribner rule) on State and privately owned timberland by species and diameter class in Colorado's northern Front Range, 1982

Species	Diameter class (inches at breast height)										All classes
	9.0- 10.9	11.0- 12.9	13.0- 14.9	15.0- 16.9	16.9- 18.9	17.0- 20.9	19.0- 22.9	21.0- 24.9	23.0- 26.9	25.0- 28.9	
- - - - - Thousand board feet, Scribner rule - - - - -											
Douglas-fir	5,688	3,312	1,417	541	810	-115	243	155	29	--	--
Ponderosa pine	20,035	8,690	6,086	4,058	2,177	499	310	236	66	5	23
Lodgepole pine	2,359	1,347	409	133	13	--	--	--	--	--	4,261
Whitebark pine	251	54	--	27	--	--	--	--	--	--	332
Limber pine	34	152	100	43	58	--	--	--	--	--	387
Subalpine fir	1,650	166	--	33	--	--	--	--	--	--	1,849
White fir	--	--	--	--	--	--	24	--	--	--	24
Engelmann spruce	7,417	1,029	1,185	913	-957	185	72	551	--	30	--
Total softwoods	37,434	14,750	9,197	5,748	2,101	569	649	942	95	35	23
Aspen	XXXXX	4,329	42	--	--	--	--	--	--	--	--
Cottonwood	XXXXX	94	--	38	30	--	--	--	--	86	4,371
Total hardwoods	XXXXX	4,423	42	38	30	--	--	--	--	86	248
A11 species	37,434	19,173	9,239	5,786	2,131	569	649	942	95	35	109
											76,162

Table 35.--Annual mortality of growing stock on State and privately owned timberland by ownership class and species in Colorado's northern Front Range, 1982

Species	Ownership class		
	State	Nonindustrial private	Total
- - - - - Thousand cubic feet - - - - -			
Douglas-fir	5	145	150
Ponderosa pine	12	307	319
Lodgepole pine	--	112	112
Engelmann spruce	17	310	327
Total softwoods	34	874	908
Aspen	14	215	229
Total hardwoods	14	215	229
All species	48	1,089	1,137

Table 36.--Annual mortality of sawtimber (International $\frac{1}{4}$ -inch rule) on State and privately owned timberland by ownership class and species in Colorado's northern Front Range, 1982

Species	Ownership class		
	State	Nonindustrial private	Total
- - - Thousand board feet, International $\frac{1}{4}$ -inch rule - - - -			
Douglas-fir	27	779	806
Ponderosa pine	45	745	790
Lodgepole pine	--	336	336
Engelmann spruce	92	1,619	1,711
Total softwoods	164	3,479	3,643
All species	164	3,479	3,643

Table 37.--Annual mortality of sawtimber (Scribner rule) on State and privately owned timberland by ownership class and species in Colorado's northern Front Range, 1982

Species	Ownership class		
	State	Nonindustrial private	Total
- - - - - Thousand board feet, Scribner rule - - - - -			
Douglas-fir	22	625	647
Ponderosa pine	38	626	664
Lodgepole pine	--	294	294
Engelmann spruce	80	1,414	1,494
Total softwoods	140	2,959	3,099
All species	140	2,959	3,099

Table 38.—Annual mortality of growing stock on State and privately owned timberland by species and diameter class in Colorado's northern Front Range, 1982

Species	Diameter class (inches at breast height)										All classes
	5.0-6.9	7.0-8.9	9.0-10.9	11.0-12.9	13.0-14.9	15.0-16.9	17.0-18.9	19.0-20.9	21.0-22.9	23.0-24.9	
— Thousand cubic feet — — — — — — — — — — — —											
Douglas-fir	--	--	--	--	--	--	--	--	150	--	--
Ponderosa pine	44	97	--	178	--	--	--	--	--	--	--
Lodgepole pine	--	--	112	--	--	--	--	--	--	--	--
Engelmann spruce	--	--	--	--	--	--	327	--	--	--	--
Total softwoods	44	97	112	178	--	--	327	150	--	--	--
Aspen	(1)	98	131	--	--	--	--	--	--	--	--
Total hardwoods	(1)	98	131	--	--	--	--	--	--	--	--
All species	44	195	243	178	--	--	327	150	--	--	--
											1,137

¹Less than 500 cubic feet.

Table 39.—Annual mortality of sawtimber (International 4-inch rule) on State and privately owned timberland by species and diameter class in Colorado's northern Front Range, 1982

Species	Diameter class (inches at breast height)										All classes
	9.0-10.9	11.0-12.9	13.0-14.9	15.0-16.9	17.0-18.9	19.0-20.9	21.0-22.9	23.0-24.9	25.0-26.9	27.0-28.9	
— Thousand board feet, International 4-inch rule — — — — — — — — — — — —											
Douglas-fir	--	--	--	--	--	--	806	--	--	--	--
Ponderosa pine	--	790	--	--	--	--	--	--	--	--	--
Lodgepole pine	336	--	--	--	--	--	--	--	--	--	--
Engelmann spruce	--	--	--	--	1,711	--	--	--	--	--	--
Total softwoods	336	790	--	--	1,711	806	--	--	--	--	--
All species	336	790	--	--	1,711	806	--	--	--	--	3,643
											3,643

Table 40.--Annual mortality of sawtimber (Scribner rule) on State and privately owned timberland by species and diameter class in Colorado's northern Front Range, 1982

Species	Diameter class (inches at breast height)							All classes
	9.0-10.9	11.0-12.9	13.0-14.9	15.0-16.9	17.0-18.9	19.0-20.9	21.0-22.9	
- - - - - Thousand board feet, Scribner rule								
Douglas-fir	--	--	--	--	--	647	--	--
Ponderosa pine	--	664	--	--	--	--	--	647
Lodgepole pine	--	--	--	--	--	--	--	664
Engelmann spruce	--	--	--	1,494	--	--	--	294
Total softwoods	294	664	--	--	1,494	647	--	1,494
All species	294	664	--	--	1,494	647	--	3,099

Table 41.--Annual mortality of growing stock on State and privately owned timberland by cause of death and species in Colorado's northern Front Range, 1982

Species	Cause of Death					Total
	Insects	Disease	Fire	Animal	Weather	
- - - - - Thousand cubic feet						
Douglas-fir	--	--	--	--	150	--
Ponderosa pine	97	--	--	--	178	--
Lodgepole pine	--	112	--	--	--	--
Engelmann spruce	--	--	--	--	--	327
Total softwoods	97	112	--	--	328	--
Aspen	--	98	--	--	--	371
Total hardwoods	--	98	--	--	--	131
All species	97	210	--	328	--	502
						1,137

Table 42.--Annual mortality of sawtimber (International 4-inch rule) on State and privately owned timberland by cause of death and species in Colorado's northern Front Range, 1982

Species	Cause of Death						Total
	Insects	Disease	Fire	Animal	Weather	Suppression	
- - - - - Thousand board feet, International 4-inch rule - - - - -							
Douglas-fir	--	--	--	--	806	--	--
Ponderosa pine	--	--	--	--	790	--	--
Lodgepole pine	--	336	--	--	--	--	336
Engelmann spruce	--	--	--	--	--	--	1,711
Total softwoods	--	336	--	--	1,596	--	1,711
All species	--	336	--	--	1,596	--	1,711
						--	3,643

Table 43.--Annual mortality of sawtimber (Scribner rule) on State and privately owned timberland by cause of death and species in Colorado's northern Front Range, 1982

Species	Cause of Death						Total
	Insects	Disease	Fire	Animal	Weather	Suppression	
- - - - - Thousand board feet, Scribner rule - - - - -							
Douglas-fir	--	--	--	--	647	--	--
Ponderosa pine	--	--	--	--	664	--	--
Lodgepole pine	--	294	--	--	--	--	294
Engelmann spruce	--	--	--	--	--	--	1,494
Total softwoods	--	294	--	--	1,311	--	1,494
All species	--	294	--	--	1,311	--	1,494
						--	3,099

Table 44.--Area of State and privately owned woodland by ownership class and forest type in Colorado's northern Front Range, 1983

Forest type	Ownership class		
	State	Nonindustrial private	Total
- - - - - Acres - - - - -			
Pinyon-juniper	697	12,445	13,142
Juniper	376	3,529	3,905
Total woodland softwoods	1,073	15,974	17,047
- - - - -			
Oak	1,231	41,266	42,497
Riparian	171	3,469	3,640
Total woodland hardwoods	1,402	44,735	46,137
- - - - -			
All types	2,475	60,709	63,184

Table 45.--Net volume of State and privately owned woodland by ownership class and species in Colorado's northern Front Range, 1983

Species	Ownership class		
	State	Nonindustrial private	Total
- - - - - Thousand cubic feet - - - - -			
Douglas-fir	1	62	63
Ponderosa pine	4	192	196
Pinyon/juniper	403	7,740	8,143
Woodland hardwoods	304	7,523	7,827
All species	712	15,517	16,229

Table 46.--Net annual growth of State and privately owned woodland by ownership class and species in Colorado's northern Front Range, 1982

Species	Ownership class		
	State	Nonindustrial private	Total
- - - - - Thousand cubic feet - - - - -			
Douglas-fir	(¹)	(¹)	(¹)
Ponderosa pine	(¹)	3	3
Pinyon/juniper	9	107	116
Woodland hardwoods	7	252	259
All species	16	362	378

¹Less than 500 cubic feet.

Table 47.--Area of State and privately owned timberland by county and ownership class in Colorado's northern Front Range, 1983

County	Ownership class		
	State	Nonindustrial private	Total
- - - - - Acres - - - - -			
Boulder	681	88,728	89,409
Clear Creek	4,336	38,810	43,146
Douglas	434	54,024	54,458
Elbert	2,611	46,493	49,104
El Paso	3,771	80,558	84,329
Gilpin	458	31,454	31,912
Jefferson	1,942	143,930	145,872
Lake	102	24,892	24,994
Larimer	17,228	217,019	234,247
Park	9,011	153,616	162,627
Teller	8,945	107,280	116,225
Total	49,519	986,804	1,036,323

Table 48.--Net volume of growing stock on State and privately owned timberland by county and ownership class in Colorado's northern Front Range, 1983

County	Ownership class		
	State	Nonindustrial private	Total
- - - - - Thousand cubic feet - - - - -			
Boulder	799	98,202	99,001
Clear Creek	5,042	39,163	44,205
Douglas	440	42,883	43,323
Elbert	1,968	34,283	36,251
El Paso	2,197	67,554	69,751
Gilpin	320	31,820	32,140
Jefferson	1,782	134,296	136,078
Lake	134	33,766	33,900
Larimer	15,904	208,355	224,259
Park	7,810	135,060	142,870
Teller	7,937	93,808	101,745
Total	44,333	919,190	963,523

Table 49.--Net volume of sawtimber (International $\frac{1}{4}$ -inch rule) on State and privately owned timberland by county and ownership class in Colorado's northern Front Range, 1983

County	Ownership class		
	State	Nonindustrial private	Total
- - Thousand board feet, International $\frac{1}{4}$ -inch rule - -			
Boulder	2,308	296,809	299,117
Clear Creek	15,539	112,409	127,948
Douglas	1,524	141,622	143,146
Elbert	6,802	117,249	124,051
El Paso	7,009	223,561	230,570
Gilpin	823	92,002	92,825
Jefferson	6,591	462,297	468,888
Lake	321	80,985	81,306
Larimer	47,800	623,992	671,792
Park	21,622	370,894	392,516
Teller	28,759	322,893	351,652
Total	139,098	2,844,713	2,983,811

Table 50.--Net volume of sawtimber (Scribner rule) on State and privately owned timberland by county and ownership class in Colorado's northern Front Range, 1983

County	Ownership class		
	State	Nonindustrial private	Total
- - - - - Thousand board feet, Scribner rule - - - - -			
Boulder	1,940	249,465	251,405
Clear Creek	13,055	94,538	107,593
Douglas	1,306	120,020	121,326
Elbert	5,755	99,123	104,878
El Paso	5,888	189,675	195,563
Gilpin	691	77,352	78,043
Jefferson	5,601	392,561	398,162
Lake	274	69,161	69,435
Larimer	40,145	523,999	564,144
Park	18,068	310,155	328,223
Teller	24,464	273,935	298,399
Total	117,187	2,399,984	2,517,171

Table 51.--Net annual growth of growing stock on State and privately owned timberland by county and ownership class in Colorado's northern Front Range, 1982

County	Ownership class		
	State	Nonindustrial private	Total
- - - - - Thousand cubic feet - - - - -			
Boulder	21	2,327	2,348
Clear Creek	114	1,044	1,158
Douglas	9	1,004	1,013
Elbert	41	754	795
El Paso	51	1,553	1,604
Gilpin	11	838	849
Jefferson	37	2,996	3,033
Lake	3	744	747
Larimer	402	5,176	5,578
Park	163	2,868	3,031
Teller	162	2,042	2,204
Total	1,014	21,346	22,360

Table 52.--Net annual growth of sawtimber (International $\frac{1}{4}$ -inch rule) on State and privately owned timberland by county and ownership class in Colorado's northern Front Range, 1982

County	Ownership class		
	State	Nonindustrial private	Total
- - Thousand board feet, International $\frac{1}{4}$ -inch rule - -			
Boulder	45	6,801	6,846
Clear Creek	320	2,809	3,129
Douglas	51	4,964	5,015
Elbert	252	4,466	4,718
El Paso	360	8,207	8,567
Gilpin	29	2,222	2,251
Jefferson	215	15,864	16,079
Lake	13	3,297	3,310
Larimer	1,199	15,757	16,956
Park	687	12,106	12,793
Teller	1,001	11,476	12,477
Total	4,172	87,969	92,141

Table 53.--Net annual growth of sawtimber (Scribner rule) on State and privately owned timberland by county and ownership class in Colorado's northern Front Range, 1982

County	Ownership class		
	State	Nonindustrial private	Total
- - - - - Thousand board feet, Scribner rule - - - - -			
Boulder	38	5,628	5,666
Clear Creek	263	2,318	2,581
Douglas	39	4,120	4,159
Elbert	201	3,612	3,813
El Paso	287	6,756	7,043
Gilpin	23	1,824	1,847
Jefferson	176	13,205	13,381
Lake	12	2,893	2,905
Larimer	966	12,810	13,776
Park	564	10,015	10,579
Teller	822	9,590	10,412
Total	3,391	72,771	76,162

Table 54.--Annual mortality of growing stock on State and privately owned timberland by county and ownership class in Colorado's northern Front Range, 1982

County	Ownership class		
	State	Nonindustrial private	Total
- - - - - Thousand cubic feet - - - - -			
Boulder	1	147	148
Clear Creek	7	54	61
Douglas	--	29	29
Elbert	1	21	22
El Paso	1	51	52
Gilpin	(¹)	43	43
Jefferson	1	133	134
Lake	(¹)	4	4
Larimer	18	251	269
Park	16	285	301
Teller	3	71	74
Total	48	1,089	1,137

¹Less than 500 cubic feet.

Table 55.--Annual mortality of sawtimber (International $\frac{1}{4}$ -inch rule) on State and privately owned timberland by county and ownership class in Colorado's northern Front Range, 1982

County	Ownership class		
	State	Nonindustrial private	Total
-- Thousand board feet, International $\frac{1}{4}$ -inch rule --			
Boulder	6	544	550
Clear Creek	29	193	222
Douglas	--	80	80
Elbert	6	95	101
El Paso	2	175	177
Gilpin	--	155	155
Jefferson	5	433	438
Lake	--	8	8
Larimer	57	784	841
Park	45	774	819
Teller	14	238	252
Total	164	3,479	3,643

Table 56.--Annual mortality of sawtimber (Scribner rule) on State and privately owned timberland by county and ownership class in Colorado's northern Front Range, 1982

County	Ownership class		
	State	Nonindustrial private	Total
- - - - - Thousand board feet, Scribner rule - - - - -			
Boulder	5	475	480
Clear Creek	26	168	194
Douglas	--	65	65
Elbert	5	76	81
El Paso	1	145	146
Gilpin	--	135	135
Jefferson	4	357	361
Lake	--	8	8
Larimer	50	685	735
Park	38	651	689
Teller	11	194	205
Total	140	2,959	3,099

Table 57.--Area of State and privately owned woodland by county and ownership class in Colorado's northern Front Range, 1983

County	Ownership class		
	State	Nonindustrial private	Total
- - - - - Acres - - - - -			
Boulder	2	1,501	1,503
Clear Creek	26	757	783
Douglas	351	25,488	25,839
Elbert	112	2,154	2,266
El Paso	404	11,227	11,631
Gilpin	(¹)	1,921	1,921
Jefferson	1	4,139	4,140
Lake	1	975	976
Larimer	872	5,352	6,224
Park	175	3,754	3,929
Teller	531	3,441	3,972
Total	2,475	60,709	63,184

¹Less than .05 acres.

Table 58.--Net volume of State and privately owned woodland by county and ownership class in Colorado's northern Front Range, 1983

County	Ownership class		
	State	Nonindustrial private	Total
- - - - - Thousand cubic feet - - - - -			
Boulder	(¹)	777	777
Clear Creek	(¹)	114	114
Douglas	66	5,949	6,015
Elbert	2	247	249
El Paso	37	3,333	3,370
Gilpin	(¹)	350	350
Jefferson	(¹)	772	772
Lake	(¹)	176	176
Larimer	450	2,086	2,536
Park	47	1,021	1,068
Teller	110	692	802
Total	712	15,517	16,229

¹Less than 500 cubic feet.

Table 59.--Net annual growth of State and privately owned woodland by county and ownership class in Colorado's northern Front Range, 1982

County	Ownership class		
	State	Nonindustrial private	Total
- - - - - Thousand cubic feet - - - - -			
Boulder	(¹)	6	6
Clear Creek	(¹)	4	4
Douglas	2	162	164
Elbert	(¹)	10	10
El Paso	2	69	71
Gilpin	(¹)	12	12
Jefferson	(¹)	25	25
Lake	(¹)	6	6
Larimer	7	34	41
Park	2	22	24
Teller	3	12	15
Total	16	362	378

¹Less than 500 cubic feet.

Conner, Roger C.; Waters, Shirley H. 1987. Colorado's northern Front Range: forest statistics for State and private land, 1983. Resour. Bull. INT-41. Ogden, UT: U.S. Department of Agriculture, Forest Service, Intermountain Research Station. 46 p.

Presents highlights of the forest resources of the northern Front Range of Colorado. Provides statistical tables for timberland and woodland forest types including area by land classes, ownership, growing-stock volumes, net annual growth, and mortality.

KEYWORDS: timberland, woodland, growing-stock volume, net annual growth, roundwood harvest, fuelwood harvest

INTERMOUNTAIN RESEARCH STATION

The Intermountain Research Station provides scientific knowledge and technology to improve management, protection, and use of the forests and rangelands of the Intermountain West. Research is designed to meet the needs of National Forest managers, Federal and State agencies, industry, academic institutions, public and private organizations, and individuals. Results of research are made available through publications, symposia, workshops, training sessions, and personal contacts.

The Intermountain Research Station territory includes Montana, Idaho, Utah, Nevada, and western Wyoming. Eighty-five percent of the lands in the Station area, about 231 million acres, are classified as forest or rangeland. They include grasslands, deserts, shrublands, alpine areas, and forests. They provide fiber for forest industries, minerals and fossil fuels for energy and industrial development, water for domestic and industrial consumption, forage for livestock and wildlife, and recreation opportunities for millions of visitors.

Several Station units conduct research in additional western States, or have missions that are national or international in scope.

Station laboratories are located in:

Boise, Idaho

Bozeman, Montana (in cooperation with Montana State University)

Logan, Utah (in cooperation with Utah State University)

Missoula, Montana (in cooperation with the University of Montana)

Moscow, Idaho (in cooperation with the University of Idaho)

Ogden, Utah

Provo, Utah (in cooperation with Brigham Young University)

Reno, Nevada (in cooperation with the University of Nevada)



USDA policy prohibits discrimination because of race, color, national origin, sex, age, religion, or handicapping condition. Any person who believes he or she has been discriminated against in any USDA-related activity should immediately contact the Secretary of Agriculture, Washington, DC 20250.